

## DOCTORAL THESIS

### Mental Health Literacy and Help-Seeking in Chinese Elite Athletes

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**Doctor of Philosophy**

**THESIS ACCEPTANCE**

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**Mental Health Literacy and Help-Seeking in Chinese**

**Elite Athletes**

**BU Danran**

**A thesis submitted in partial fulfillment of the requirements**

**for the degree of**

**Doctor of Philosophy**

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**January 2021**

## DECLARATION

I hereby declare that this thesis represents my own work which has been done after registration for the degree of PhD at Hong Kong Baptist University, and has not been previously included in a thesis or dissertation submitted to this or any other institution for a degree, diploma or other qualification.

I have read the University's current research ethics guidelines, and accept responsibility for the conduct of the procedures in accordance with the University's Research Ethics Committee (REC). I have attempted to identify all the risks related to this research that may arise in conducting this research , obtained the relevant ethical approval, and acknowledged my obligations and the rights of the participants.

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## ABSTRACT

**Objective:** Although severe mental health issues are found in elite athletes, they do not seeking help. Mental health literacy (MHL) is recognised as one major factor influencing athletes' help-seeking when they experiencing mental health difficulties. There are three aims of this research. Study 1 aims to provide a systematic review of the effectiveness of the MHL training program on enhancing mental health knowledge, and help-seeking, as well as reducing stigmas in athletes. Study 2 aims to understand mental health help-seeking behaviours and potential factors influencing mental health help-seeking behaviours of Chinese elite athletes from the triangulated perspectives. Based on the findings of Study 1 and Study 2, the MHL intervention was designed and implemented in Chinese elite athletes, which aimed to increase MHL, help-seeking attitudes, intentions, and behaviours, as well as decrease stigmas.

**Methods:** In study 1, to identify intervention studies of MHL programmes, five electronic databases were systematically searched for articles published before May 2020. The selection procedure was based on the PRISMA guidelines. All kinds of study designs were included. Effect sizes were calculated for mental health knowledge, stigma reduction and help-seeking attitudes, intentions and behaviours. Risk of bias was assessed for each study using the Cochrane tool and the Newcastle–Ottawa quality assessment scale. In study 2, a qualitative approach consisting of one-to-one, face-to-face semi-structured interviews were conducted among elite athletes ( $n = 20$ ) and their coaches ( $n = 12$ ) and team officials ( $n = 5$ ) to explore the mental health help-seeking behaviours and potential factors influencing mental health help-seeking behaviours of Chinese elite athletes. In study 3, an eight-week MHL intervention programme conducted to enhance MHL, help-seeking attitudes, and intentions, as well as reducing stigmas of mental health issues and improving help-seeking behaviours among 50 Chinese elite athletes.

**Results:** In study 1, five studies (1,239 participants in total) were selected for review. Overall, either small or medium effects were found for mental health knowledge, stigma reduction, help-seeking attitudes and intentions for post- and follow-up interventions, whereas a null effect was found in help-seeking behaviours for both post- and follow-up interventions. Furthermore, three studies had a low risk of bias and two had a high risk of bias. In study 2, six main themes emerged from the content analysis of the qualitative data, which include help-seeking behaviours; mental health experience, MHL, help-seeking attitudes,

help-seeking intentions; and socio-cultural factors influencing athletes' mental health help-seeking. It was found that the Chinese elite athletes suffered from various mental health issues, and their MHL, help-seeking attitudes and intentions, and socio-cultural factors associated with their help-seeking behaviours. In study 3, the intervention results demonstrated that participants in the intervention group improved their MHL, help-seeking attitudes, and intentions, as well as reduced stigmas, to a greater extent than those in the waiting list control condition. However, help-seeking behaviours were not significantly enhanced in both post- and follow-up tests compared with the waiting list control group.

**Conclusion:** According to the findings of the above studies, one MHL programme tailored specifically to the needs of Chinese elite athletes was urgently required. It could provide new knowledge to future research on MHL and help-seeking in Chinese elite athletes, which further suggested that some MHL education programmes are highly recommended.

**Keywords:** Mental health literacy, help-seeking, Chinese elite athletes

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## LIST OF SYMBOLS

ANOVA	Analyses of variance
CI	Confidence interval
M	Mean
N	Number of cases in a sample
OR	Odds ratio
P	Probability
partial $\eta^2$	Partial et squared
SD	Standard Deviation

## LIST OF ABBREVIATIONS

CES-D	The Center for Epidemiological Studies Depression Scale
FEPSAC	The European Federation of Sport Psychology
GAD	Generalized Anxiety Disorder
IOC	The International Olympic Committee
IG	Intervention group
ISSP	The International Society of Sport Psychology
MHL	Mental health literacy
NACC	The National Collegiate Athletic Association
NOS	The Newcastle-Ottawa Scale
NRS	Non-randomised controlled study
PRISMA	Preferred Report in Items for Systematic Reviews and Meta-analyses
RCT	Randomized controlled trials
TPB	The theory of planned behavior
WCG	Waiting list control group

# **CHAPTER 1. Introduction**

## **1.1 Background of the Study**

In recent decades, most well-known elite athletes have been thought to have positive mental characteristics, such as confidence, attentional focus and commitment, which are beneficial to their optimal performance (Holland et al., 2010; Larkin et al., 2017). From this perspective, elite athletes should be mentally strong and should not have mental health issues. However, elite athletes are not immune to mental health issues in their competitive careers and post-retirement career transitions (Allen & Hopkins, 2015; Gouttebauge et al., 2016; Schinke et al., 2017; Stambulova & Ryba, 2014). In fact, research has shown that elite athletes struggle with mental health issues, that are closely associated with their performance (Schinke et al., 2017). For instance, peak performance periods in most elite sport overlap with a peak onset period of mental health disorders in life (Allen & Hopkins, 2015; Jones, 2013). Therefore, consensus statements have emphasised the importance of mental health for the athletic population to develop and inspire mental health initiatives for athletes, such as the International Olympic Committee consensus statement (Reardon et al., 2019), the International Society of Sport Psychology Think Tank Consensus (Henriksen et al., 2019), and the position statement of the European Federation of Sport Psychology (Moesch et al., 2018a).

The prevalence of mental health issues among elite athletes is increasing, which not only negatively affects their mental well-being, performance and development but can also result in heavy personal, social and economic burdens (Dowell et al., 2020; Schinke et al., 2017). Studies have shown that elite athletes struggle with various mental health issues, such as depression (Hammond et al., 2013; Wolanin et al., 2016), anxiety disorders (Abrahamsen et al., 2008; Hatzigeorgiadis & Chroni, 2007), eating disorders caused by weight control (Kong & Harris, 2015; Wolanin et al., 2016), substance abuse (Dunn et al., 2012), stress problems related to competition (Anshel & Si, 2008; Dugdale et al., 2002), living away from home caused problems (Bruner et al., 2008), injury-related problems (Birrer et al., 2013; Johnson & Ivarsson, 2011), unsatisfactory relationships with coaches (Davis & Jowett, 2014; Roxas & Ridinger, 2016), sleeping concerns and problems (Erlacher et al., 2011; Schobersberger & Schobersberger, 2012), identified confusion (Krane, 2015; Krane et al., 2010), and expected or unexpected retirement from sport (Ivarsson et al., 2016; Reints, 2011), among others.

Although severe mental health issues have been found in elite athletes, athletes tend to avoid or delay seeking professional help (Gulliver et al., 2012a). In the mental health context, help-seeking is an adaptive coping process in which people seek external assistance to deal with a mental health issue (Rickwood & Thomas, 2012). In China, a study by Guo (2008) revealed that

86% of elite athletes have never received professional mental health assistance. The elite sport environment can expose athletes to barriers that influence their attitudes, reducing their willingness to seek help (Breslin et al., 2018a). Therefore, help-seeking behaviour has emerged and has become a high priority for research, policy and programme initiatives (Rickwood & Thomas, 2012). Recently, one systematic review by Gulliver et al. (2010) showed that poor mental health literacy (MHL) and stigma associated with mental health are the main barriers to help-seeking among young people and adults. Waston et al. (2007) study indicated that student-athletes who suffer from mental illness or seek mental health or sport psychology services are often stereotyped as weak or mentally incompetent. In addition, Watson (2005) study revealed that compared with non-athletes, athletes have a more negative attitude towards help-seeking. In summary, poor MHL, the stigma associated with mental health issues and negative help-seeking attitudes are the main barriers to mental health help-seeking among athletes.

The most effective strategy for overcoming these barriers and difficulties in help-seeking is to enhance MHL, which has received global attention among mental health interventions (Kutcher et al., 2016b; Sebbens et al., 2016). MHL is defined as knowledge and beliefs about mental disorders, which facilitate their recognition, management or prevention (Jorm et al., 1997). By this definition, MHL has seven components: recognition of mental disorders,

knowledge of how to find information on mental health, knowledge of mental health risk factors, knowledge of the aetiology/causes of mental illness, knowledge of self-treatment, knowledge of available professional help and attitudes that promote recognition of appropriate help-seeking behaviour (Jorm, 2012). Previous studies have revealed that mental disorders are not well recognised by the public in many countries, such as Australia, Canada, the UK and the US (Jorm et al., 2006; Jorm, 2012). For example, a qualitative study by Gulliver et al. (2012a) found that elite athletes lack knowledge about the symptoms of mental disorders, such as the difference between fatigue caused by physical exhaustion from training and depression or anxiety. It showed that 70% of Chinese elite athletes have a low level of MHL, which means that athletes do not know how to recognise mental health issues (Guo, 2008). Recently, another study by Han et al. (2019) showed that 92% of Chinese elite athletes have a low to medium level of MHL that requires improvement. MHL is a key concept in mental health, which is associated not only with mental health help-seeking, but also with the recognition, management or prevention of mental disorders. The level of MHL in the general population worldwide is low, so improving MHL is essential to normalise, prevent and detect mental health issues (Jorm, 2000; Kelly et al., 2007; Moesch et al., 2018b). A similar situation has been found among elite athletes, and better action for improvements are required (Breslin et al., 2018a).



In addition to the low level of MHL, the high level of stigma associated with mental health issues has been recognised as one of the main barriers to help-seeking in elite sport (Abram et al., 2008; Larkin et al., 2017). Stigma refers to negative thoughts, feelings and behaviours towards individuals or groups who have characteristics or engage in behaviours that are considered by society to be unacceptable and/or inadequate (Wahto et al., 2016; Watson, 2006). There are two types of stigma: public stigma and self-stigma. Public stigma is the public perception that the stigmatised group is socially unacceptable. Self-stigma refers to an individual's devaluation of his or her self-esteem and self-efficacy when suffering from mental health issues due to public stigma (Corrigan, 2004). For elite athletes, their main stigma is that their coaches, teammates, family members and even their competitors may think they are weak (Gulliver et al., 2010; Bauman, 2016). Coaches' negative evaluation of mental health issues can affect athletes' involvement and performance in sport and general well-being (Mazzer & Rickwood, 2015). In addition, athletes can be devalued by their teammates. Research by Linder et al. (1989) demonstrated that male athletes who seek help from sport psychologists on performance enhancement are often assessed negatively by their peers. Therefore, the anti-stigma approach should be highlighted by athletes and coaches to facilitate help-seeking behaviour to deal with mental health issues (Breslin et al., 2018b; Ferguson et al., 2018).

To avoid being perceived as incompetent or a negative image, some people may be reluctant to report their mental health issues, which may lead to a reluctance to seek help (Lannin et al., 2016). In sport, athletes worry about what will happen if they approach someone for help, which can be a barrier (Gulliver et al., 2012a). Athletes are also influenced by their coaches. If their coaches are unwilling to seek help from professional psychologists, they can minimise the mental health issues in sport, negatively affecting the help-seeking behaviour of athletes (Nowicka et al., 2013; Waston et al., 2007). In addition, some athletes feel uncomfortable talking to a counsellor or a psychologist (Gulliver et al., 2012a). This negative experience with professional psychologists can lead to negative attitudes towards help-seeking. If a relationship of trust between sport psychologists and athletes cannot be established, it will be difficult to conduct a consultation related to mental health issues. Moreover, if the psychologist cannot offer effective suggestions or strategies to resolve mental health issues, the athlete may have a negative impression, leading to an ineffective consultation (Coyle et al., 2017; Gulliver et al., 2012a). Thus, negative impressions of professional mental health assistance can lead athletes to avoid seeking help.

The avoidance of help-seeking when suffering from mental health issues can be explained by the psychological theory of behaviour change (Breslin et al., 2016). Help-seeking theory provides a solid theoretical foundation and

guide for help-seeking interventions in mental health (Rickwood et al., 2005). It conceptualises help-seeking as a four-step framework process model that integrates individual and psychological factors that facilitate or hinder the help-seeking process at the micro level. Help-seeking is described as a process of positive search and the use of social relationships to deal with personal problems through a formal or informal approach. The four steps of help-seeking theory are (1) awareness and appraisal of problems, (2) expression of symptoms and need for support, (3) availability of sources of help, and (4) willingness to seek out and disclose to sources (Rickwood et al., 2005). MHL plays a key role in this four-step framework process. In particular, MHL can increase people's awareness of mental health issues, improve their attitudes and beliefs about seeking help and treatment effectively and increase their knowledge and information about professional help and self-help (Davies, 2015). This model has been used to develop interventions for university students suffering from depression (Davies, 2015).

There is an urgent need to develop tailored interventions to increase the help-seeking behaviour of elite athletes in the sport context. Cultural issues and contexts are key components that can influence mental health and should be raised (Gorczyński et al., 2020b). Previous interventions have mainly focused on different aspects, such as raising awareness of mental health issues, improving help-seeking attitudes and intentions or reducing stigma, to improve

actual help-seeking behaviour in the sport context (Beable et al., 2017; Hurley et al., 2018; Sebbens et al., 2016; Vella et al., 2018). However, intervention research in this area is still in its early stage. First, there has been little evidence of the effectiveness of previous MHL programmes conducted especially for elite athletes (Gulliver et al., 2012b). Second, most research on mental health help-seeking has been conducted in Western countries (Furnham & Hamid, 2014; Gorczynski et al., 2020b). However, cultural issues and the context of MHL should be considered. Indeed, the cultural differences between Western and Eastern countries are relatively large, especially in mental health. Take the example of the US and China: in the US, the purpose of mental health reflects individualism, namely, ‘assist individuals to overcome obstacles to their personal growth, wherever these might be encountered, and ... [achieve] optimum development of their personal resources’ (American Psychological Association, 1956: 283). This objective is mainly focused on individuals and their personal rights and interests (Duan, 2018). In contrast, the objectives of mental health services in China are ‘to enhance public mental health, facilitate[e] social stability as well as interpersonal harmony, and improve public well-being ... and to foster personal morality, promote coordinated ... economic and social development, nurture and exercise socialist values and principles’ (Committee of National Health and Family Planning, 2016: 1). This definition has three aspects: emphasising public health, facilitating harmony,

which involves individuals and society, and emphasising morality and social responsibility (Duan, 2018). It should be noted that the different perspectives on mental health are highlighted in different cultural values, especially in terms of individualism and collectivism (Duan, 2018). Third, with regard to the sport context, Chinese elite athletes are trained under the Whole Nation system, which is a special administration of the Chinese government. The two main characteristics of the Whole Nation system are (1) the prioritisation and importance of collective interests, and (2) an executive-led system that takes care of professional and technical issues (Si & Jiang, 2011). The proper adaption of this system for athletes and a full understanding of their relationships with coaches and teammates are key elements of mental well-being (Lundqvist & Sandin, 2014; Si et al., 2016). However, many Chinese elite athletes continue to struggle to create satisfactory relationships with their coaches and teammates (Wang & Dong, 2018). Nevertheless, an effective intervention approach to enhance help-seeking behaviour among Chinese elite athletes has not been developed (Pinto-Foltz et al., 2011).

## **1.2 Statement of the Problem**

Compared with the general population, mental health issues are common in the athletic population (Breslin et al., 2018b). However, studies have shown that most elite athletes do not seek professional help regardless of the difficult situation they experienced (Gulliver et al., 2012a). For instance, a study by

Rickwood et al. (2005) pointed out that the first step for athletes to seek help is to become aware of their mental health issues. This means that athletes should develop their MHL to have enough information about mental health issues. Obviously, the level of MHL among athletes is not adequate. Studies focusing on athletes in Ireland have revealed that the MHL mean score for athletes is lower than that for the general population (Breslin et al., 2018b; Rüsç et al., 2011). Similarly, a study by Han et al. (2019) demonstrated that 92% of Chinese elite athletes have a low to medium level of MHL, which may lead to reluctance to seek help.

From the literature review, three main observations are identified. First, regarding the importance of mental health in sport, MHL and help-seeking behaviour have received more attention in recent years. Several evidence-based mental health knowledge and awareness programmes have been developed. For example, in Australia, sport psychologists offer a programme for elite athletes to improve their help-seeking attitudes, intentions and behaviours, enhance their MHL and reduce stigma (Gulliver et al., 2012b). Therefore, with more evidence-based programmes to improve mental health help-seeking, it is important to conduct a systematic review of the MHL interventions available to elite athletes in the sport context.

Second, with regard to Chinese culture and the Chinese sport context, there is insufficient knowledge of mental health experience and knowledge,

mental health help-seeking behaviour, and potential factors influencing help-seeking behaviour among athletes, coaches and team officials. For example, in Chinese culture, due to traditional beliefs and values, mental health issues are viewed as negative consequences inflicted by demons or as punishment for the wrongdoing of ancestors (Wong et al., 2004). Therefore, the stigma associated with mental health issues in China may be higher than in Western countries. In addition, Chinese people often prefer self-reliance or rely on traditional Chinese medicine for treatment due to traditional culture (Wei et al., 2020). Given the uniqueness of the Chinese sport system, it is important to identify the underlying factors that influence mental health knowledge, help-seeking behaviour to cope with mental health issues and how to bridge the gap between MHL, stigma, help-seeking attitudes, intentions to seek help and actual help-seeking behaviours. Chinese elite athletes' training and competition experience related to mental health, as well as their help-seeking behaviour are strongly associated with their national identity and culture based on the characteristics of the Whole Nation system, which is influenced by collective interests, the executive-led knowledge system (Shi et al., 1994). Therefore, a qualitative study from a comprehensive perspective that explores the experience of mental health issues, MHL, help-seeking attitudes, intentions and behaviours, and potential factors influencing help-seeking behaviours in elite athletes should be conducted with Chinese elite athletes, coaches and team officials.

In addition, interventions related to MHL should be conducted with Chinese elite athletes to improve their MHL and mental health help-seeking. Based on China's Whole Nation system, key components should be included in the study, such as establishing positive relationships with coaches and teammates and creating a harmonious and positive training environment (Si & Jiang, 2011). Taking the examples of countries like the US and Australia, where improving athletes' MHL is part of the national mental health policy, cultural consideration should be implemented to better protect athletes from mental health issues (Breslin et al., 2018a; Gorczynski et al., 2020b; Gulliver et al., 2012b; Larkin et al., 2017). Therefore, the results of this intervention study should encourage the Chinese sport authority to adopt a similar practice.

### **1.3 Purpose of the Study**

The objectives of this study were to (1) conduct a systematic review of MHL programmes and interventions for elite athletes seeking to increase their MHL, reduce stigma associated with mental health issues and improve their help-seeking attitudes, intentions and behaviours; (2) conduct a qualitative study to explore the athletes' existing help-seeking behaviors and explore the factors that may influence athletes' help-seeking behaviours by triangulating the perspectives of athletes, coaches and team officials; and (3) examine the effectiveness of the MHL intervention programme to enhance MHL, help-seeking attitudes, intentions and behaviours and reduce stigma among



Chinese elite athletes. In this study, the primary outcome was the improvement of MHL and mental health help-seeking attitudes and intentions among Chinese elite athletes. The secondary outcomes were to improve actual help-seeking behaviours and reduce the stigma associated with mental health issues.

#### **1.4 Research Questions**

To achieve these objectives, the following research questions were examined:

1. What is the content of previous MHL interventions to enhance mental health help-seeking attitudes, intentions and behaviour among elite athletes?
2. What are the existing help-seeking behaviours and the factors that may influence help-seeking behaviours of Chinese elite athletes viewed from the perspective of athletes, coaches and team officials?
3. How effective is the proposed intervention programme to enhance MHL, help-seeking attitudes, intentions and behaviours and reduce the stigma associated with mental health issues among Chinese elite athletes?

#### **1.5 Structure of the Thesis and Design Rationale**

Based on the empirical evidence to answer the research questions mentioned above, the three studies in this thesis are logically connected. The first systematic review study provided basic knowledge and understanding of MHL and mental health help-seeking in the sport context. Previous evidence of

the effectiveness of MHL interventions lacks a methodological basis for determining which types of programmes are most effective. Future programmes should focus on these research gaps in knowledge and methodology (Sport Northern Ireland, 2017). The second qualitative study focused on exploring and preparing for the third study to provide an in-depth understanding of mental health experience, MHL, help-seeking attitudes, intentions and behaviours, as well as potential factors influencing help-seeking behaviours based on Chinese culture and the Chinese sport system. Thus, based on the Studies 1 and 2, an MHL intervention programme for Chinese elite athletes was developed and implemented in Study 3. In this thesis, Research Question 1 was addressed by a systematic review, Research Question 2 was answered through a qualitative approach and Research Question 3 was studied using a quantitative method.

## **1.6 Research Hypotheses**

Based on the research questions, the following two hypotheses for Study 3 are proposed:

Hypothesis 1: After completing the MHL intervention programme, the participants show greater improvements in MHL and mental health help-seeking attitudes and intentions during the post-intervention and follow-up assessments than those in the control group.

Hypothesis 2: After completing the MHL intervention programme, the participants have better help-seeking behaviours and less stigma associated with

mental health issues during the post-intervention and follow-up assessments compared with those in the control group.

## **1.7 Definitions and Terms**

The definitions and terms to be explained include:

1. Mental health: a state of well-being in which each individual realises his or her potential to cope with the normal stresses of life to work productively and fruitfully and to contribute to the community (World Health Organization, 2014).

2. Mental health issues is defined as the situation when it influences athletes' abilities to perform (Gerbing & Thiel, 2016; Yang, 2015).

3. Mental health symptoms and disorders is defined as the symptoms and disorders must meet specific criteria for diagnosis according to their duration, frequency, and severity (American Psychiatric Association, 2013; Gorczynski et al., 2020b; WHO, 2018)

4. Mental health concerns: the presence of distressing symptoms (e.g., stress and anxiety) that do not meet the criteria for a diagnosed mental illness (Muir & Munroe-Chandler, 2020).

5. Mental health literacy (MHL): MHL is defined as knowledge and beliefs about mental disorders which aid their recognition, management, or prevention (Jorm et al., 1997).

6. Stigma: Stigma refers to the negative thoughts, feelings, and behaviors

toward individuals or groups that possess characteristics or engage in behaviors that are viewed by the larger society as unacceptable and/or inadequate (Wahto et al., 2016; Watson, 2005).

7. Help-seeking: In the mental health context, help-seeking is an adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern (Rickwood & Thomas, 2012). Measures of help-seeking-related attitudes, intentions, and behaviors (Clement et al., 2015).

8. Chinese elite athletes: Athletes who have a provincial-level elite athlete certificate (Wu et al., 2013).

9. Team officials: Operationally defined as people who assume an administrative role and serve as the head of a sport training centre.

## **1.8 Significance of the Study**

MHL and help-seeking are essential for improving the mental health of Chinese elite athletes. The results of Study 1 contribute to the field by providing a scientific review of intervention programmes to understand MHL and mental health help-seeking in the sport context. The results of Study 2 help explain the MHL, mental health experience and help-seeking behaviours of elite athletes, taking into account Chinese culture and China's unique Whole Nation sport system. Study 3 examined the effectiveness of the intervention programme to enhance MHL, help-seeking attitudes and intentions, reduce the stigma associated with mental health issues and improve help-seeking

behaviour among Chinese elite athletes. This study can make a significant contribution to coaches and sport practitioners who are interested in developing strategies or interventions to enhance MHL and mental health help-seeking among elite athletes.

Additionally, Chinese elite athletes training under the Whole Nation system can experience mental health issues and face various unique risk factors in this highly competitive and collective training environment (Hughes & Leavey, 2012). By taking into account the Chinese sport system, the proposed intervention can make a significant contribution to the development of future mental health intervention programmes for Chinese elite athletes.

In addition to the theoretical and practical values mentioned above, this thesis makes a methodological contribution to study design by using qualitative and quantitative methods applicable in the sport context. Compared with traditional research based on a single epistemology, this study provides a basis for future research on the promotion of mental health.

## **CHAPTER 2. Literature Review**

### **2.1 Prevalence of Mental Health Issues in the Sport Context**

Elite athletes are similar to the general population when it comes to mental health issues (Rice et al., 2016). A study by Liu (2012) revealed that 30.2% of Chinese elite athletes suffer from depression and 30% suffer from anxiety. Previous studies have suggested that depression, anxiety, sleep-related concerns and problems, substance use, weight control caused issues are the main mental health issues discussed among athletes. Furthermore, stress, injury and poor relationship with others are main risk factors related to mental health issues (Putukian, 2016; Rice et al., 2016; Reardon et al., 2019).

Elite athletes have shown a high prevalence of depression. For example, in Canada, a study by Hammond et al. (2013) found that more than two thirds of elite swimmers met the criteria for major depressive disorder before a competition, which was significantly higher than the general population. After the competition, more than one third still met the diagnostic criteria and more than one fourth reported mild to moderate symptoms of depression. Similarly, in Germany, a study by Nixdorf et al. (2013) revealed an overall prevalence of 15% for depression in elite athletes and higher levels of depressive symptoms in individual athletes than in team athletes. In Australia, a study by Gulliver et al. (2015) found that 23.6% of male elite athletes and 30.5% of female elite

athletes had a problem with depression, revealing levels of depression similar to those in the college population. In the student-athlete population, almost one quarter of the prevalence rate was related to a clinically relevant level of depressive symptoms, as measured by the Center for Epidemiological Studies Depression Scale (CES-D) (Wolanin et al., 2016).

In terms of anxiety, a study by Gulliver et al. (2015) found that 7.1% of Australian elite athletes met the criteria for generalised anxiety disorder and 4.5% for panic disorder. In the US, about one third of male collegiate athletes reported feeling excessive anxiety, as did about half of their female counterparts (NCAA Sport Science Institute, 2016). Some studies have combined depression and anxiety into one questionnaire to better understand these two problems. For example, in the Netherlands, a study by Gouttebarga et al. (2017) revealed that 45% of current elite athletes and 29% of former elite athletes suffer from anxiety and depression. In the UK, a study by Foskett and Longstaff (2017) reported that almost half of the elite athletes suffer from anxiety and depression (143 in total). Moreover, a study by Hatzigeorgiadis and Chroni (2007) revealed that anxiety is negatively correlated with coping strategies among elite swimmers. However, little research has examined the prevalence of anxiety in the elite population (Biggin et al., 2017).

Sleep-related concerns and problems are also often found among elite athletes (Reardon et al., 2019). Previous results have shown that sleep issues

can weaken athletic performance in many sports (Calogiuri & Weydahl, 2014; Dunican et al., 2017), and more importantly, elite athletes are unlikely to get enough sleep the night before competition (Juliff et al., 2015; Roberts et al., 2019). For instance, one study by Erlacher et al. (2011) found that almost 66% German elite athletes had experienced sleep issues the night before sport competition at least once and more than 62% had had sleep issues at least once during the previous year. Insomnia is one of the main risk factors for mental health disorders (Baglioni et al., 2011; Spiegelhalder et al., 2013). One study by Juliff et al. (2015) revealed that almost 64% of Olympic-level athletes have significant insomnia symptoms. Another study by Liu (2012) found that 56% of Chinese elite athletes struggle with insomnia, especially after a heavy training load, affecting their depression and anxiety.

In terms of substance abuse, alcohol and drug use are important problems among elite athletes. In the US, for example, about one third of female collegiate athletes reported consuming more than 4 alcoholic drinks in one sitting and almost half of their male counterparts consumed more than 5, 16% of whom consumed more than 10 drinks (NCAA, 2014). Another study by Waddington (2005) in England revealed that professional footballers used recreational drugs frequently, and almost half of the participants knew of players who used drugs. One third of the players had not been tested for drugs in the previous two years, and 60% did not think they would be tested the



following year. In Australia, Dunn and Thomas (2012) study found that 8% ( $N = 134$ ) of elite athletes reported using at least one illicit drug in the past year. Another study by Dunn et al. (2012) found that the prevalence of drug use was higher among athletes in general than among athletes in their sport based on the participants' drug use history.

As athletes suffer from eating disorders like the general population does, weight control is a powerful predictor of eating disorders, especially for weight category sports events, aesthetic sports and those requiring a low body mass (Joy et al., 2016; Thiemann et al., 2015; Reardon et al., 2019). Previous studies have shown that female athletes suffer from more serious problems than non-athletes. For instance, one study by Sundgot-Borgen and Torstveit (1993) found that 18% of female athletes met the criteria for an eating disorder compared with 5% of the non-athletic population. Similar results were obtained in another study by Swami et al. (2011), indicating that 20% of female athletes met the criteria for an eating disorder compared with 9% of the control group. Recently, more studies have revealed that eating disorders and disordered eating are also severe problems among male performers (Chatterton & Petrie, 2013; Glazer, 2008; Lingor & Olson, 2010). Although the prevalence of eating disorders in male athletes is not as high as that in female athletes, the prevalence is higher than among male non-athletes (Joy et al., 2016). One study by Rosendahl et al. (2009) found that the prevalence of eating disorders among

male athletes was 10%, 17% and 42% in endurance sports, weight category sports and antigravity sports, respectively. Therefore, all stakeholders should be aware of weight control issues. Therefore, all stakeholders should be aware of weight control issues (Joy et al., 2016).

In competitive sport, stress is common, and elite athletes experience various stressors (Mellalieu et al., 2009). Coping strategies have been shown to always be associated with psychosocial stressors, such as managing poor performance, injury or recovery. In addition, adaptive and maladaptive coping strategies have been identified, although few studies have focused on enhancing athletes' coping strategies (Rice et al., 2016). Moreover, stress does not only occur during competitive careers, but also after retirement. For instance, a study by Wippert and Wippert (2008) in Germany showed that about one fifth of retired skiing players reported clinical levels of traumatic stress three and eight months after retirement.

Injuries are the common high-risk behaviours among elite athletes (Coyle et al., 2017; Ivarsson et al., 2016; Zillmer & Gigli, 2007). Most athletes experience injuries at various points in their careers (Mosewich et al., 2014; Smith & McManus, 2009). Injuries can have various long-term effects on athletes depending on their severity. They can influence their training process, their lifestyle and even their participation in competition. Severe injuries can also lead to premature career termination (Ivarsson et al., 2016). The literature

has shown that injuries are common in athletes and that psychological responses to injury range from normal to problematic, which can affect their mental health (Putukian, 2016). For example, Brewer and Petrie (1995) study found that 33% of injured athletes reported high levels of depressive symptoms among Division I football players, compared with 27% of non-injured athletes, using the CES-D scale.

In summary, as IOC stated, previous studies have shown that elite athletes often struggle with mental health issues such as depression, anxiety disorders, eating disorders, injury-caused problems, sleeping disorders and other mental health disorders (Reardon et al., 2019). Stress, injury and poor relationships might cause mental health issues (Putukian, 2016; Rice et al., 2016; Reardon et al., 2019; Si & Su, 2013). Since these kinds of mental health issues have a negative influence on the athletes' mental well-being, performance and development, mental health should be emphasised in sport context (Schinke et al., 2018).

## **2.2 Barriers and Facilitators to Mental Health Help-Seeking in the Sport Context**

Help-seeking is a multifactorial process that involves how cognition (e.g. beliefs, attitudes) influences intentions and subsequent behaviours and focuses on communication and action for advice, treatment and support for a health problem (Rickwood & Thomas, 2012). Mental health help-seeking is 'an

adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern' (Rickwood & Thomas, 2012).

Elite athletes try to cope with the diverse demands of their sport, but the low level of MHL, stigma and negative attitudes towards help-seeking are the main barriers to help-seeking behaviour, as discussed above. In addition, research has identified facilitators to help-seeking, such as positive past experience, social support, positive relationships with providers and education (Gulliver et al., 2012a).

The main barrier is the low level of MHL, the knowledge and beliefs about mental disorders that facilitate their recognition and management or prevention (Jorm et al., 1997). In China, one study by Guo (2008) found that 70% of elite athletes have a low level of MHL. In Ireland, research has demonstrated that athletes showed that their MHL mean score was even lower than that of the general population (Breslin et al., 2018b; Rüsçh et al., 2011). In the UK, based on sociocultural resources, values and performance as important contextual factors, Coyle et al. (2017) study of elite divers indicated that the participants suffered from mental illness during their athletic careers. It also showed that these divers had limited knowledge of the symptoms of mental illness. They admitted to having various risk factors (i.e. body image, injury) inherent in their sport performance and culture, revealing a performative and gendered dimension of mental health. Moreover, their coaches, who have the most

contact with the athletes, indicated that they did not have enough mental health knowledge. They realised the potential negative effect of mental health issues on athletes' participation and performance in sport and general well-being (Mazzer & Rickwood, 2015). It should be noted that approximately half of the coaches had never received mental health training. Therefore, the components of MHL, including awareness of signs and symptoms and knowledge of professional help-seeking options, were highlighted as key topics to develop in coach education (Ferguson et al., 2018).

The second main barrier is the high level of stigma. Stigma refers to negative thoughts, feelings and behaviours towards individuals or groups who have characteristics or engage in behaviours that are considered by society to be unacceptable and/or inadequate (Wahto et al., 2016; Watson, 2005). Compared with non-athletes, Kaier et al. (2015) study of NCAA athletes found that athletes have a much higher level of personal stigma. Swann et al. (2018) study from the perspective of adolescent male athletes also revealed that the stigma of masculinity reduces the likelihood of seeking help. Some of them mentioned that sport is generally perceived to be negative for mental health due to the stress of competition. Among male professional footballers, those with high-risk mental health issues did not seek professional support. The main barriers to seeking help were their sense of shame and their belief that help-seeking was for those who had no choice (Wood et al., 2017). In addition,

their coaches agreed that the high level of stigma associated with mental health issues was one of the main barriers preventing athletes from seeking support. They realised that their negative evaluation of mental health disorders could affect athletes' involvement and performance in sport and general well-being (Mazzer & Rickwood, 2015). To reduce stigma, these coaches suggested open discussion and awareness of these issues. They also recognised that support from sport psychologists and clinical psychologists was most appropriate. Finally, they were aware that relevant education and information on mental health was essential (Biggin et al., 2017).

Negative attitudes towards help-seeking were the third barrier. Some elite athletes who struggle with mental health are unlikely to seek help. For example, self-management of difficulties through recreational drugs, alcohol, unhealthy eating, 'covering up' the problem and doing nothing were approaches adopted by equestrian athletes (Butler-Coyne et al., 2018). General approaches, such as seeking the help of coaches or a trusted person rather than professional assistance, were also mentioned (Butler-Coyne et al., 2018). When male professional footballers experienced mental health issues, they preferred to talk about their problems to family members, especially their female partners and mothers, instead of seeking professional support due to fear of rejection (Wood et al., 2017).

Social support can facilitate help-seeking behaviour and should be

integrated with different types of support resources. For athletes, support generally comes from coaches, family members and teammates (Coyle et al., 2017). If they (i.e. coaches, family members and teammates) have a positive attitude towards mental health issues, most athletes believe that they will benefit from those around them. In particular, if their coaches think that it is important to deal with mental health issues and take them seriously, athletes are more likely to ask for help (Gulliver et al., 2012a). Moreover, coaches' recognition of the support of sport psychologists and clinical psychologists is an appropriate approach (Biggin et al., 2017). Furthermore, parents tend to provide adequate support and assistance when athletes suffer from mental health issues (Mason et al., 2015). Their supportive behaviours can lead to adaptive outcomes, including having a conversation, creating a loving environment and offering useful advice and support (Dorsch et al., 2017; Hurley et al., 2017). For athletes, strong and positive relationships with their teammates facilitate the discussion of mental health issues or related issues. For instance, some athletes have reported benefiting from supportive behaviours or attitudes through team activities, with emotional support playing a facilitative role. Specifically, given the vital role of teammates, peers are one of the primary sources of support (Rickwood et al., 2005; Swann et al., 2018).

Positive relationships with coaches or sport psychologists are also a powerful facilitator (Gulliver et al., 2012a; Mazzer & Rickwood, 2015).

Athletes generally consult their coaches or sport psychologists when suffering from mental health issues. However, an unsatisfactory relationship with a provider during the initial consultation may prevent an athlete from asking the same person for help in the future. Worse, it may prevent them from asking others for help. Coaches can be trusted external providers for young athletes, and should therefore establish positive and friendly relationships with athletes to create an environment of support and trust when athletes struggle with mental health issues (Mazzer & Rickwood, 2015). Sport psychologists also play a key role in mental health assistance. If the relationships between sport psychologists and athletes are not close, consultations will be difficult. The athletes were willing to share their information with those with whom they felt safe and were not shy or scared. In addition, some elite athletes may feel uncomfortable during a consultation when talking to a counsellor or psychologist, preventing them from seeking help (Gulliver et al., 2012a). Moreover, if sport psychologists cannot offer effective suggestions or strategies, the negative impression of these providers can lead to ineffective client-consultant relationships (Coyle et al., 2017; Gulliver et al., 2012a).

Education to raise awareness of mental health is another effective approach to improve mental health help-seeking. Data from a previous study by Gulliver et al. (2012b) on an educational programme for elite athletes in Australia revealed that these programmes should be available to athletes to



improve their help-seeking attitudes and intentions and raise their mental health awareness. In addition, the coaches suggested that relevant mental health education and information was needed (Biggin et al., 2017). They also indicated that educational courses should be given face to face and in a homogenous group setting when possible (Ferguson et al., 2018).

In summary, these studies explored the perceptions, barriers, and facilitators to mental health help-seeking from the perspective of coaches and athletes. However, there are still research gaps. With regard to athletes, some study samples focused on specific sport groups, including diving (Coyle et al., 2017), football (Wood et al., 2017) and equestrian (Butler-Coyne et al., 2018), limiting the generalisability of the results to other sports. Another limitation was that some studies only focused on male athletes (Swann et al., 2018; Wood et al., 2017), which may lead to sampling bias. For coaches, the sample size was the main limitation, as it was not representative of a larger population. In addition, the gender of the coaches was not indicated in the studies. It would be beneficial to analyse the different opinions of female and male coaches, as gender differences may lead to variations in the results.

### **2.3 Theoretical Background of Mental Health Help-Seeking**

Although facilitators and barriers to mental health help-seeking have been identified, mental health help-seeking behaviour has been criticised for not being related to behaviour change theories (Breslin et al., 2017b). This lack of

theoretical basis can hinder the development of interventions to promote help-seeking (Griffiths, 2013). Models for mental health help-seeking generally consist of a multi-stage process involving several interconnected cognitions and behaviours (Downs & Eisenberg, 2012). This multi-stage process has five elements. First, the spectrum of activity, which involves attitudes, intentions and actual behaviours. It assumes that attitudes predict intentions, which in turn predict behaviours, and is therefore consistent with the theory of planned behaviour (TPB, Ajzen, 1991). Second, the time frame, which indicates that help-seeking takes place over a given period and involves a range of actions, including searching for information on the help available and seeking face-to-face help. Third, the sources of help, divided into three aspects: informal help coming from social relationships (e.g. parents, friends), formal help from professionals with expertise (e.g. psychologists) and self-help (e.g. unguided website use). Fourth, the type of health problem requiring help and the symptoms and disorders varying in their severity, longevity and diagnostic criteria, which can affect help-seeking actions. Fifth, the type of assistance, which includes psychoeducation, problem understanding, emotional or social support and treatment (Rickwood et al., 2005; 2012). Thus, help-seeking theory may be suitable for explaining mental health help-seeking (Rickwood et al., 2005).

### **2.3.1 Help-Seeking Theory**

Rickwood et al. (2005) proposed a four-stage framework process model that combines individual and psychological factors that facilitate or hinder the help-seeking process at the micro level. This theory assumes that mental health help-seeking is a social transaction between the personal domain of the internal world of thoughts and feelings and the interpersonal domain of social relationships. Help-seeking can be seen as a process of actively seeking and using social relationships, formal or informal, to deal with personal issues. Specifically, there are four steps in help-seeking to deal with mental health issues. The first is to be aware of the symptoms and acknowledge the problem. The second step is to express this problem in words for others to understand, and to feel comfortable in doing so. The third step is related to the availability and accessibility of sources of help. Finally, help-seekers must be willing and able to reveal their personal inner state to a chosen source (Davies, 2015; Rickwood et al., 2005). In summary, the model includes a person's knowledge and perceptions of available sources of help and his or her attitudes and beliefs about help-seeking (Rickwood et al., 2005).

This model is designed to support the mental health help-seeking process, which can be suitable for intervention development (Davies, 2015). An intervention by Costin et al., (2009) with young adults suffering from depression was developed based on this model to encourage help-seeking. This

intervention aimed to enhance intentions, behaviours, MHL (ability to recognise problems) and knowledge of progress in mental health help-seeking, and it showed that this model was suitable for help-seeking (Costin et al., 2009).

In summary, help-seeking theory (Rickwood et al., 2005) illustrates the consistent relationship between mental health help-seeking intentions and behaviours. More importantly, self-recognition of symptoms is an important aspect of MHL, as it affects early detection and predicts help-seeking behavioura (Wright et al., 2007). This is an important step in the mental health help-seeking process (Davies, 2015). As mentioned before, some mental health help-seeking interventions based on this theory have been conducted with university students or young adults suffering from depression (Costin et al., 2009; Davies, 2015).

## **2.4 The Role of Mental Health Literacy**

The ability to identify mental health issues is essential given the high lifetime risk of suffering from mental health issues (Jorm et al., 1997). As mentioned earlier, MHL is a multifaceted concept that includes beliefs, knowledge and attitudes towards mental disorders, and facilitating their recognition, management and prevention (Jorm et al., 1997). Specifically, MHL also consists seven components: (1) recognition of mental disorders, (2) knowledge of how to seek mental health information, (3) knowledge of mental

health risk factors, (4) knowledge of etiology/causes of mental illness, (5) knowledge of self-treatment, (6) knowledge of professional help available, and (7) attitudes that promote recognition of appropriate help-seeking behaviors (Jorm, 2012).

Many of its factors are related to the determinants of help-seeking theory. Self-recognition of symptoms is an important aspect of MHL affecting early detection and predicting help-seeking behaviour (Wright et al., 2007). MHL interventions can also change stigmatising attitudes and beliefs about mental health and help-seeking (Clement et al., 2015). Although MHL is an effective approach to conceptualise factors affecting mental health, its instruments have methodological limitations due to the limited number of measures that can assess its attributes in a scale-based format (O'Connor & Casey, 2015).

#### **2.4.1 Mental Health Literacy Measurements**

Exploring MHL can be difficult because it consists of several concepts requiring different measures. MHL can be measured in different ways: some measures produce a score indicating a quantitative level, whereas others do not use score-based data. These issues have been discussed in a recent review by O'Connor et al. (2014). Vignettes and mixed methods are two approaches commonly used to explore MHL. Mixed methods include multiple choice questionnaires, Likert scales and dichotomous questions (O'Connor et al., 2014).

The most commonly used measure of MHL is the vignette interview, which presents a vignette that describes a person with a mental health problem, such as depression, anxiety or social phobia (Jorm et al., 1997). Participants are randomly assigned to receive the male (John) or female (Mary) version of the vignette. They answer questions related to their understanding of what is ‘wrong’ with the individual in the vignette (Jorm et al., 1997; 2005). However, the total score or subscale score is not generated by the original MHL vignette interview. Instead, four studies (Jorm et al., 2010b; Kitchener & Jorm, 2002; Smith & Shochet, 2011; Yeap & Low, 2009) based on the MHL vignette interview are used to calculate the total score and subscale score (O’Connor et al., 2014). However, these studies are not based on a scale-based questionnaire, so the participants can provide answers to questions that may not reflect their knowledge of the aetiology and treatment of these particular disorders (O’Connor et al., 2014). Moreover, studies using this measure have rarely assessed other aspects of MHL, such as knowledge of the causes and risk factors of mental illness and mental health resources, as confirmed in the definition by Jorm and his colleagues (Jorm, 2000; Jung et al., 2016).

The Mental Health Literacy Scale (MHLS; O’Connor & Casey, 2015) was initially developed based on all of the attributes of the definition of MHL in the general population (aged 17 to 55) in Australia. The MHLS includes 35 items reflecting 6 dimensions of MHL. The internal consistency of this scale is 0.879

and its test-retest reliability is 0.797, with good known-groups validity and construct validity. The MHLS has a minimum score of 35 and a maximum score of 160, with a higher score indicating a higher level of MHL. Questions are rated on a 4-point scale ranging from 1 (very unlikely/unhelpful) to 4 (very likely/helpful), and on a 5-point scale ranging from 1 (strongly disagree/definitely unwilling) to 5 (strongly agree/definitely willing). The questionnaire was tested with UK students and found to have good internal consistency (Gorczyński et al., 2017).

The 33-item Chinese version of the MHLS has been tested in the elite population (aged 12 to 31). The Chinese MHLS has a minimum score of 33 and a maximum score of 150, with a higher score indicating a higher level of MHL. Questions are rated on 4-point ranging from 1 (very unlikely/unhelpful) to 4 (very likely/helpful), and 5-point scales ranging from 1 (strongly disagree/definitely unwilling) to 5 (strongly agree/definitely willing). The internal consistency of this scale is .704 and the test-retest reliability is .763, with good construct validity (Han et al., 2019).

The Mental Health Literacy Questionnaire (MHLq; Campos et al., 2016) was developed to measure MHL in young people (aged 12 to 14) in Portuguese. It includes 33 items reflecting three dimensions of MHL: first aid skills and help-seeking, knowledge/stereotypes and self-help strategies. The internal consistency of this scale is 0.84 with good test-retest reliability. A 29-item

MHLq was later tested with a group of young adults (aged 18 to 25) in Portuguese. This 29-item MHLq includes four factors: knowledge of mental health problems, erroneous beliefs/stereotypes, first aid skills and help-seeking behaviour and self-help strategies (Dias et al., 2018). Cronbach's alpha is 0.84, suggesting good internal consistency. However, no evidence has shown whether this questionnaire is supported in other countries or populations.

The Multicomponent Mental Health Literacy scale (MHLs; Jung et al., 2016) consists of 26 items rated on a 5-point scale, with a higher score indicating a higher level of MHL. The MHLs has been tested with public housing staff in the US, with three dimensions: knowledge-oriented MHL, beliefs-oriented MHL and resource-oriented MHL. The internal consistency of the scale is 0.83, with good known-groups validity and convergent validity. Recently, it has been validated with student athletes and student athletic therapists in Canada, demonstrating good construct validity with the 14 modified items of the three-factor model: knowledge-oriented MHL, beliefs-oriented MHL and resource-oriented MHL. Composite Cronbach's alpha for this questionnaire is .654. Knowledge-oriented MHL and beliefs-oriented MHL are rated from 0 to 5 and resource-oriented MHL is rated from 0 to 4, with a higher score indicating a higher level of MHL (Jung et al., 2016).

The Questionnaire for Assessment of Mental Health Literacy



(QuAliSMental, Loureiro, 2015) is a vignette and Likert-scale questionnaire assessing five components: recognition of disorders, knowledge of professional help and treatment available, knowledge of the effectiveness of self-help strategies, knowledge and skills necessary to provide support and first aid to others, and knowledge of how to prevent mental disorders. The questionnaire has been tested with Portuguese adolescents and young people with good reliability and construct validity (Loureiro, 2015). Similar to other scales, it has thus far not been validated or applied in other regions and countries.

The Mental Health Knowledge Questionnaire (MHKQ, Wang et al., 2013) is a 20-item questionnaire to assess mental health knowledge in the Chinese general population, with five factors: awareness of mental health promotion activities, belief that mental disorders are rare and unchangeable, normalisation of psychological problems and mental disorders, mental health as part of general well-being, and incorrect beliefs about the causes of mental disorders. It has two choices: right or wrong. The response rate for 'right' in this questionnaire ranges from 26% to 98%, with a mean rate of 72%. Cronbach's alpha is 0.69 (Wang et al., 2013).

Other measures evaluate one or two dimensions of MHL, such as the Depression Literacy Questionnaire (D-lit; Kiropoulos et al., 2011) and the Anxiety Literacy Questionnaire (A-lit; Gulliver et al., 2012b). These two questionnaires include 22 items, each consisting of a statement evaluating

people's knowledge of depression and anxiety. For each statement, participants choose from one of three options (true, false, I don't know). These questionnaires have good reliability. Cronbach's alpha for D-lit in the athletic population is .70 and that for A-lit in the same population is .76 (Gulliver et al., 2012b).

The EspaiJove.net Mental Health Literacy (EMHL, Castellvi et al., 2020) test was developed for Spanish adolescents and includes 35 items. It has two parts: identifying mental disorders with yes/no answers and promoting mental health, preventing mental disorders, and facilitating help-seeking behaviour, with multiple choice questions with four options. Cronbach's alpha values for the two parts are .744 and .615. However, it has not been validated or applied in other regions and countries.

In summary, MHL is a multidimensional concept, and vignette and mixed methods are the two approaches commonly used to explore MHL. However, most measures have not been validated or used in other regions or countries. Summary of key characteristics of mental health literacy questionnaires is present in Table 1.

Table 1.

*Summary of key characteristics of mental health literacy questionnaires*

Title and Author	Participants	Age	N	Format of MHL measure	Contents
Vignette Interview; Jorm et al. (2010)	Adults	No age range reported $M=40; SD = 12$	262	Vignette and self-constructed questionnaire	Description of an individual with a mental health difficulty including depression, anxiety, social phobia
Mental Health Literacy Scale; O'Connor & Casey (2015)	Adults, university students	Stage 1: age = 18–80, $M = 33.25, SD = 16.02;$ Stage 2: age = 17-55, $M = 21.10, SD = 6.27$	Stage 1: 202 Stage 2: 372	Likert-response questionnaire	Recognition of disorders, knowledge of how to seek mental health information, knowledge of risk factors and causes, knowledge of self-treatments, knowledge of professional help available, and attitudes that promote recognition and appropriate help-seeking.
Mental Health	Students	study 1 age =	study	Likert-response	First aid skills and help-seeking;

Literacy Questionnaire; Campos et al., (2016)		12-15, $M = 13.12$ ; $SD =$ 1.01 study 2 age = 11-17 $M = 13.08$ ; $SD =$ 1.06	1: 239; study 2: 737;	questionnaire	knowledge/stereotypes; and self-help strategies
Mental Health Literacy Questionnaire; Dias et al., (2018)	Young adults	Age = 18-25 $M = 21.13$ ; $SD =$ 3.69	356	Likert-response questionnaire	Knowledge of mental health problems; erroneous beliefs/stereotypes; first aid skills and help-seeking behavior; and self-help strategies
Mental Health Literacy scale; Jung et al. (2016)	General population	Age = 22-64 $M = 44.56$ ; $SD$ : not reported	209	Likert-response questionnaire	Knowledge-oriented MHL, beliefs-oriented MHL, and resource-oriented MHL
Multicomponent	Student	Student athletes ( $M$	444	Likert-response	Knowledge-oriented MHL,

Mental Health Literacy Measure	athletes and student trainers	= 20.49, <i>SD</i> = 1.98), student trainers ( <i>M</i> = 21.34, <i>SD</i> = 1.69); No age range reported		questionnaire	beliefs-oriented MHL, and resource-oriented MHL
Questionnaire for Assessment of Mental Health Literacy; Loureiro (2015)	Adolescents and young people	Age = 14-24 <i>M</i> = 16.75; <i>SD</i> = 1.62	4938	Vignette and Likert-response questionnaire	Recognition of disorders, the knowledge about the professionals and treatments available, knowledge of the effectiveness of self-help strategies, knowledge, and skills needed to provide support and first aid to others, and the knowledge of how to prevent mental disorders
Mental Health	General	No age range	1953	Dichotomous-respo	Awareness of mental health

Knowledge Questionnaire; Wang et al. (2013)	population	reported $M = 50; SD = 17$		nse questionnaire	promotion activities, belief that mental disorders are uncommon and unchangeable, normalization of psychological problems and mental disorders, mental health as part of overall well-being, and incorrect beliefs about causes of mental disorders.
Depression Literacy Questionnaire Kiropoulos et al., (2011)	General population	No age range reported $M = 36.4; SD = 9.4$	525	Dichotomous-respo nse questionnaire	Depression Literacy
Anxiety Literacy Questionnaire;	Elite athletes	Age = 14-48 $M = 25.5; SD$ not	59	Dichotomous-respo nse questionnaire	Anxiety Literacy

Gulliver et al. (2012)		reported			
Mental Health Literacy Scale; Han et al. (2019)	Elite athletes	Age= 12-31 $M = 18.9; SD = 3.95$	283	Likert-response questionnaire	Recognition of disorders, knowledge of how to seek mental health information, knowledge of risk factors and causes, knowledge of self-treatments, knowledge of professional help available, attitudes that promote recognition and appropriate help-seeking
The EspaiJove.net Mental Health Literacy; Castellvi et al., (2020)	High school students	Age = 14-15 $M = 14.5; SD = 0.66$	355	Dichotomous-response and a multiple choice-response questionnaire	The identification of mental disorders; promote mental health, prevent mental disorders, and facilitate help-seeking behavior

#### **2.4.2 Interventions of Mental Health Literacy in Sports Context**

Recently, several attempts have been made to enhance MHL among athletes and coaches. For example, the Elite Athlete Mental Health Strategy (TEAMS, Gulliver et al., 2012b) project is an Internet-based intervention designed to improve help-seeking attitudes, intentions and behaviour among young elite athletes in Australia. The intervention includes a list of help-seeking resources for mental health issues. MHL and destigmatisation and a feedback condition providing the levels of symptoms of depression and anxiety. The results revealed that by delivering a brief destigmatisation intervention, the level of MHL increased and that of stigma decreased, but the help-seeking behaviour of the participants did not improve. This study design has multiple advantages. First, it can reach a large number and a wide range of athletes in a cost-effective manner via its online delivery. Second, it is the first randomised controlled trial (RCT) design of an Internet-based mental health help-seeking intervention for young elite athletes, offering an alternative approach to delivering information. Third, this intervention targets not only athletes who currently need help but also those who may need help in the future. However, the limitations of this project are its small sample and low recruitment rate (Gulliver, et al., 2012b).

Support for Sport (Van Raalte et al., 2015) is a web-based intervention designed to create and assess a multimedia and interactive website to help



student-athletes and coaches gain the knowledge and confidence needed to make effective mental health referrals. The website uses materials such as intercollegiate athletics handbooks, scientific articles related to mental health referrals and government-sponsored and non-commercial websites related to mental health. It consists of six sections: 'get support', 'facts', 'about', 'contact', 'what would you do' and 'having a conversation'. The results showed improvements in mental health knowledge and the efficacy of referrals in the treatment group compared with the control group. The main advantage of this programme is that the material on the website can be applied to student-athletes, coaches and athletic directors with different objectives. However, its main limitation is that the majority of the original participants were women, which limits the generalisability of the results.

The Athletes Connected programme (AC, Kern et al., 2017) is a 1-hour face-to-face intervention designed to increase mental health knowledge, help-seeking intentions, and support for teammates and to reduce stigma among college student-athletes. It includes an overview of mental health among student-athletes, two short videos featuring two former college student-athletes struggling with mental illness, additional first-person disclosure by the former student-athletes featured in the videos about their experiences with mental health issues, open discussion with these former student-athletes, and common barriers to help-seeking. The main advantage of this programme is the content

of the intervention containing relatable stories, which makes it easier for student-athletes to understand. Another strength is its large sample (626 student-athletes). However, its main limitation is that the measures do not evaluate all relevant aspects of the constructs. In addition, there is no control group or follow-up evaluation.

The State of Mind Ireland (SOMI) programme (SOMI, Breslin et al., 2018a) is a 75-minute, multi-component mental health and well-being programme designed to enhance mental health knowledge and intentions to improve support, resilience and well-being for university student-athletes. It includes five ways to reach achieve these goals: ‘connect’, ‘be active’, ‘take notice’, ‘keep learning’ and ‘giving’. The results revealed that this awareness programme increased knowledge about mental health in the treatment group compared with the control group. However, the programme did not improve resilience or well-being. The main advantage of this programme is its high level of attendance, as it is a scheduled class session rather than an opt-in session. However, there are two major limitations. First, similar to the previous programmes, the SOMI uses a quasi-experiment design in which the participants are not randomly divided into groups. Second, its long-term effects could not be examined due to the low response rate when collecting follow-up data.

The Coach the Coach project (Pierce et al., 2010) is an early intervention

focused on football athletes, coaches, and officials who can influence athletes' mental health awareness and help-seeking behaviour. Based on Mental Health First Aid (MHFA; Kitchener & Jorm, 2002), this project is designed to increase public mental health first aid strategies and help people cope with mental health issues. It involves five steps: 'assess the risk of suicide or harm', 'listen non-judgmentally', 'reassure and inform', 'encourage the person to seek appropriate professional help', and 'encourage self-help strategies' (Kitchener & Jorm, 2002). The results showed that most coaches and club leaders were better able to recognise mental illness and were more confident in their ability to respond to other people's mental health issues. The main advantage of this programme is that it includes qualitative focus groups and interviews to support the results. Its main limitation is that the original study was conducted in a rural area, which limited the generalisability of the results to a larger population (Pierce et al., 2010).

The Ahead of the Game programme (Vella et al., 2018) is a multi-component, community-wide mental health protocol for prevention and early intervention designed to enhance mental health in adolescent male athletes, parents and coaches. It includes four intervention components and an additional messaging campaign. The first intervention component, a targeted MHL programme for adolescent male athletes, is called 'Help out a mate'. This intervention includes the following components: 'what is mental health and

mental illness’, ‘myths about mental illness’ ‘what is depression’, ‘what is anxiety’, ‘how to provide help’ and ‘where to get reliable information’. The second intervention component, an Internet-based resilience intervention for adolescent males, is called ‘Your path to success in sport’. This intervention includes the following components: ‘problem-solving’, ‘controlling the controllable’, ‘managing your thoughts’, ‘keeping your cool’, ‘playing to your strengths’ and ‘appreciating your team’. The third and fourth intervention components are called ‘Parent program: MHL’ and ‘ABCs of motivation: Internet-supported coach education program’. The notable strength of this intervention is that based on its multi-level design, it is expected to result in more changes in primary outcomes and the maintenance of potential benefits. The limitation of this study is that the sample focusing on male athletes can lead to sampling bias, potentially influencing the results.

Several intervention programmes focus on coaches. Mental Health in Sport (MHS; Sebbens et al., 2016) is a 4-hour workshop designed to educate and develop the skills of people working in the high-performance sport context on mental health. It mainly involves four steps: ‘recognise’, ‘reach out’, ‘refer’ and ‘remain supportive’. Similar to MHFA, MHS focuses on increasing mental health knowledge and confidence, applying an action plan framework for coaches and support staff working with elite athletes and teams in Australia. The results showed that the participants who attended the workshop increased

their knowledge of mental illness and were more confident in their ability to help people suffering from mental health problems. The main advantage of this programme is its focus on coaches and staff working closely with elite athletes, providing mental health assistance thanks to their important positions in the daily training environment of athletes. Its main limitation is its quasi-experiment design, which can lead to differences in the unobserved and potentially confounding variables between the two groups (Sebbens et al., 2016).

The Mood Matters in Sport Programme (MMSP; Sport Northern Ireland, 2016) is an educational mental health awareness programme focused on coaches in Ireland. The MMSP is a 3-hour workshop designed to change perceptions of stigma and enhance knowledge about mental health, leading to help-seeking behaviour. It involves seven components: ‘mental health awareness and definition’, ‘what factors affect our mental health’, ‘mental health problems and mental illnesses’, ‘risk factor signs and symptoms’, ‘treatment’, ‘self-help strategies’ and ‘sources of help’. The results revealed improvements in mental health knowledge, perceptions of mental health stigma and confidence in the ability to help those with mental health issues (Breslin et al., 2016; Breslin, et al., 2017). The main advantage of this programme is that the qualitative results support the main results of this study. Its limitation is related to the lack of RCT design, as it includes one non-randomised

quasi-experiment and one quasi-experiment without a control group.

All of these interventions are listed in Table 2. There is an urgent need to develop an intervention to enhance MHL among elite athletes. Specifically, mental health knowledge, stigma and attitudes towards help-seeking should be improved among elite athletes. Since limited research focused on athletes, MHL intervention on coaches should be also highlighted. However, intervention research in this area is still in its infancy, and all of the above studies were implemented in Western countries (Furnham & Hamid, 2014). Currently, there is no tailored intervention for Chinese elite athletes. It is therefore essential to conduct a targeted intervention to better protect Chinese elite athletes against mental health issues (Larkin et al., 2017).

## **2.5 Research Gaps**

Based on literature reviews, research gaps have existed. Firstly, previous studies lack an understanding of available MHL interventions in athletes. Secondly, there is a lack of bottom-up understanding of the help-seeking behaviours and potential factors influencing behaviours in Chinese elite athletes. Thirdly, there is a lack of tailored interventions to enhance MHL aiming to increase help-seeking in Chinese elite athletes.

Table 2.

*Summary of strengths and limitations of mental health literacy interventions in sports settings*

Intervention	Study design	Participants	Strengths	Limitations
The Elite Athlete Mental Health Strategy (TEAMS, Gulliver et al., 2012b)	A 5 weeks program, by an Internet-based intervention; Randomized control trial	Elite athletes ( $N = 59$ )	The first study to test the feasibility of targeting help-seeking attitudes, intentions and behavior in an Internet-based format with elite athletes	Low achieved samples and low recruitment rates
Support for Sport (Van Raalte et al., 2015)	A 1-day online session; Randomized control trial	Student-athletes ( $N = 153$ )	The first study that included the development and assessment of multimedia materials to target the mental health referral knowledge and mental health referral	The majority of the participants were female, which limited the generalizability of the results

			efficacy of student-athletes	
Athletes Connected (AC, Kern et al., 2017)	A 1-hour face-to-face session; Pre- and post-design	Student-Athletes ( $N = 626$ ; 177 males; 157 females; 292 unknown)	The large sample size; the video interventions involved stories, which could have made it easier for student-athletes to relate	No control group; the questions did not measure all relevant aspects of the constructs; no follow-up evaluation
The state of Mind Ireland Program (SOMI, Breslin et al., 2018a)	A 75-minute face-to-face program; Control trail	Student-athletes ( $N = 100$ ; 59 males, 41 females)	The fidelity of the program; feasibility of the research	No randomization methods; the poor return rate of questionnaires in follow-up
Coach the Coach project (Pierce et al., 2010)	A 3-week program (12-hour psycho-educational sessions); Pre-post design (club leaders and coaches);	Club leaders and coaches ( $N = 36$ ); elite athletes ( $N = 275$ )	With qualitative focus groups and interviews to support the results	Leaders and coaches: small sample size, no control group; Players: unclear information on their attendance and involvement



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	controlled trial (football players)			in the intervention; no effect sizes reported
The Ahead of Game Program (Vella et al., 2018) (Protocol)	A 3-hour Internet-based intervention, 4-hour workshop and 3-hour mentor session (for each group)	Adolescent male athletes, parents, and coaches.	A multi-level and multi-components design	It only includes adolescent male athletes
Mental Health First Aid (MHFA; Bapat, Jorm, & Lawrence, 2009)	A 3-week program (8-hour); Pre-post design	Players, parents and coaches ( $N = 40$ ; 16 males, 24 females)	The first program in sport setting	No control group; small sample size; no effect sizes reports; no follow-up data
Mental Health in Sport (Sebbens et al., 2016)	A 4-hour workshop; Pre-post design	Coaches and working staff ( $N = 166$ ; 83 males, 83 females)	Most of the participants had no prior mental health training, provide an alternative MHL program	No randomization methods; and no effect sizes reports; only focused on two mental illnesses

The Mood Matters in Sport Program (MMSP, Breslin et al., 2017a)	A 1 day (3-hour) workshop; controlled trial	Sport coaches ( <i>N</i> = 244; 126 males, 118 females)	With qualitative focus groups and interviews to support the results	No randomization methods; no follow-up data; no effect sizes reported
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## **CHAPTER 3. Mental Health Literacy Intervention on Help-Seeking in Athletes: A Systematic Review**

### **3.1 Purpose of the Study**

Based on limited knowledge about MHL interventions in the sport context, this study conducted a systematic review of MHL programmes focused on athletes in the sport context to enhance mental health knowledge/literacy, improve help-seeking attitudes, reduce stigma and improve their help-seeking intentions and behaviour, compared with no intervention or other relevant interventions. Both RCT and pre-test and post-test designs were assessed. In addition, the quality of the interventions reported in these studies was examined. The results of Study 1 contributed to the development of the MHL intervention programme for this dissertation. The advantage of a systematic review is that, first, it can evaluate several outcomes of interest, including MHL, help-seeking attitudes, intentions and behaviours and stigma. Second, it can improve the methodological transparency of previous studies, which is beneficial for future studies (Mallett et al., 2012).

### **3.2 Methods**

#### **3.2.1 Search Strategy**

This systematic review protocol was registered on PROSPERO

(registration number: CRD42020171090). The systematic study selection procedure was based on a 'Preferred Report in Items for Systematic Reviews and Meta-analyses' PRISMA guideline (Liberati et al., 2009)(see Appendix 1). The literature search was conducted by electronic search in five databases: PsycINFO, PubMed, Web of science, Scopus and SPORTDiscus. Articles published before 8 May 2020 were included, which is the updated search date.

Keyword searching and combined keyword searching were used in five databases as follows: (mental health literacy OR mental health awareness OR mental health knowledge OR mental health first aid OR mental health service OR mental health strategy OR mental health promotion OR mental health education OR mental health prevention) AND (sport organisation OR sport club OR sport school OR sport setting OR sport training) AND (athlete OR player OR sportsman) AND (intervention OR training OR trial OR programme).

### **3.2.2 Eligibility Criteria**

In the current review, the literature search was limited to articles published in English. In addition to the limit mentioned above, specific inclusion and exclusion criteria were set to verify the eligibility of the articles by reading the title, abstract and full text.

Inclusion criteria: (1) studies using different types of study designs were involved: between-subjects design (i.e. posttest-only control group design), within-subjects design (i.e. pretest-posttest design) and mixed design (i.e.

pretest-posttest control group design) (Higgins & Green, 2008); (2) In terms of participants, we only focused on athletes in a professional or amateur sport club or organisation. The study participants were of all ages.

Exclusion criteria: participants recruited from participating community sporting clubs, but they are not athletes (Breslin et al., 2017b).

### **3.2.3 Study Selection**

The data selection was conducted as follows. First, all database searches were exported from the software to a folder. All titles, abstracts and keywords were screened to exclude irrelevant studies. All relevant studies were retained for further screening. Then, the full text of the remaining relevant studies was assessed using the inclusion criteria. This study selection was evaluated by two independent reviewers. Discrepancies were discussed by the two reviewers until agreement was reached.

### **3.2.4 Data Collection Process and Data Items**

The study characteristics and outcomes of each selected study were extracted. The information extracted from each selected study included the following: (1) the participants' demographic information (including age [ $M$ ,  $SD$ , range], percentage of women, type of sport and country); (2) intervention information (including intervention deliverer, duration, number of sessions, frequency, and delivery mode [face to face, online, blended]); and (3) study

information (including design [RCT, controlled, cluster-RCT], comparison condition [waiting list group, no intervention, other educational interventions, other mental health educational interventions], sample type [athletes, student-athletes] and sample size [total, intervention/control, baseline/post/follow-up]) (Morgan et al., 2018).

### **3.2.5 Risk of Bias Assessment**

The quality of the studies was assessed according to the Cochrane Collaboration to evaluate methodological quality in systematic reviews (Higgins & Green, 2008). The included studies were classified as randomised or non-randomised designs, and the design of each study was assessed with an applicable bias assessment tool. The Cochrane Collaboration tool was used to evaluate risk of bias for RCTs (Higgins & Green, 2008).

These criteria involved seven domains of bias: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting and other bias. In each domain, the overall risk of bias was rated as high, low or unclear. In addition, the Newcastle-Ottawa quality assessment scale was used to assess risk of bias for non-RCTs. In each evaluation, high quality choices were identified with a star (Stang, 2010). Specific, selection, comparability and exposure (for case-control studies)/outcome (for cohort studies) with four, one and three questions, respectively, were evaluated. A study could be assigned a

maximum of one star for each numbered item in the selection and exposure/outcome categories. A maximum of two stars could be awarded for the comparability category. According to the recommendations of the Cochrane Collaboration, the risk of bias of each study based on the overall bias results for each outcome was reported (Breslin et al., 2017b). As with the study selection, the risk of bias for all included studies was evaluated by two independent reviewers, and a third reviewer was consulted and consensus was reached in the event of disagreement.

### **3.2.6 Outcome Categories**

Three sets of outcomes were evaluated: (1) mental health knowledge/literacy/awareness, (2) help-seeking attitudes, and intentions and behaviours (according to the spectrum of activity, help-seeking process involves attitudes, intentions and actual behaviours, which further supported the theory of planned behaviour, Ajzen, 1991). According to their approaches to help, outcomes were further classified as formal help, informal help and self-help (Knight, 2006; Rickwood & Thomas, 2012); and (3) stigma or negative attitudes towards mental health problems. If one study does not include any of the mentioned outcomes, it was excluded. At least one outcome involved was accepted.

### 3.2.7 Analysis

To assess the effects of these interventions, the names of the measures and the reported values for intervention effectiveness (i.e.  $p$  value, effect size) were collected and calculated. Following previous studies, the statistically significant effects were based on  $p < .05$  and the effect size  $d$  was classified as small = 0.2, medium = 0.5 or large = 0.8 (Cohen, 1992). For help-seeking behaviour, the odds ratio (OR) was provided. The effects of each study are reported in Tables 4 - 9. No meta-analysis was conducted due to the diversity of the interventions and outcome measures. In line with the objectives of this study, no additional analyses were conducted, including separate meta-analyses or subgroup and sensitivity analyses.

### 3.3 Results

A flowchart presenting the procedure for selecting the studies is shown in Figure 1. The initial database search identified 1,338 studies. After removing 167 duplicates, the titles and abstracts of 1,118 potentially eligible studies were screened and 1,091 were excluded. After screening the full text of the remaining 53 studies, only 5 met the inclusion criteria. Then, the reference lists of these studies were screened. No additional studies met the inclusion criteria. In the end, five studies were used for this review.



### 3.3.1 Characteristics of the Included Programmes and their Studies

The study characteristics are detailed in Table 3. The publication years ranged from 2010 to 2018. In the 5 studies, 1,239 participants were involved, including 450 women and 279 men. Three studies (Kern et al., 2017; Pierce et al., 2010; Van Raalte et al., 2015) did not report the gender of the participants, and involved 231, 275 and 4 participants, respectively. The country where the studies were carried out were Australia ( $N = 2$ ), the US ( $N = 2$ ) and Ireland ( $N = 1$ ). The participants were elite athletes ( $N = 2$ ), and student-athletes ( $N = 3$ ). Three studies reported the type of sport (Breslin et al., 2018a; Pierce et al., 2010; Van Raalte et al., 2015), and two studies did not (Gulliver et al., 2012b; Kern et al., 2017).

For each study, the names of the authors, the year of publication, the programme name, the delivery mode, the follow-up points and the duration are summarised in Table 4. The interventions implemented were the State of Mind Ireland (SOMI,  $N = 1$ , Breslin et al., 2018b), the Elite Athlete Mental Health Strategy (TEAMS,  $N = 1$ , Gulliver et al., 2012b), the Athletes Connected (AC,  $N = 1$ , Kern et al., 2017), the Mental Health First Aid (MHFA,  $N = 1$ , Pierce et al., 2010) and the Support For Sport ( $N = 1$ , Van Raalte et al., 2015). Four of these studies were designed by the intervention group (Breslin et al., 2018a; Gulliver et al., 2012b; Kern et al., 2017; Van Raalte et al., 2015) and one was based on an existing protocol (MHFA, Pierce et al., 2010). The study designs

included RCTs ( $N = 2$ ), non-RCTs ( $N = 2$ ) and pretest-posttest designs with no control group ( $N = 1$ ). All studies used a variety of comparison conditions, with three using active programmes and one using a non-intervention design. The modes of delivery were online ( $N = 2$ ) and face to face ( $N = 3$ ). Gulliver et al. (2012b) study carried out a follow-up test three months after the initial intervention ( $N = 1$ ); the other interventions did not (Breslin et al., 2018a; Kern et al., 2017; Pierce et al., 2010; Van Raalte et al., 2015). Breslin et al. (2018a) study did not provide data for all of the variables due to a low participation rate for the 3-month follow-up.

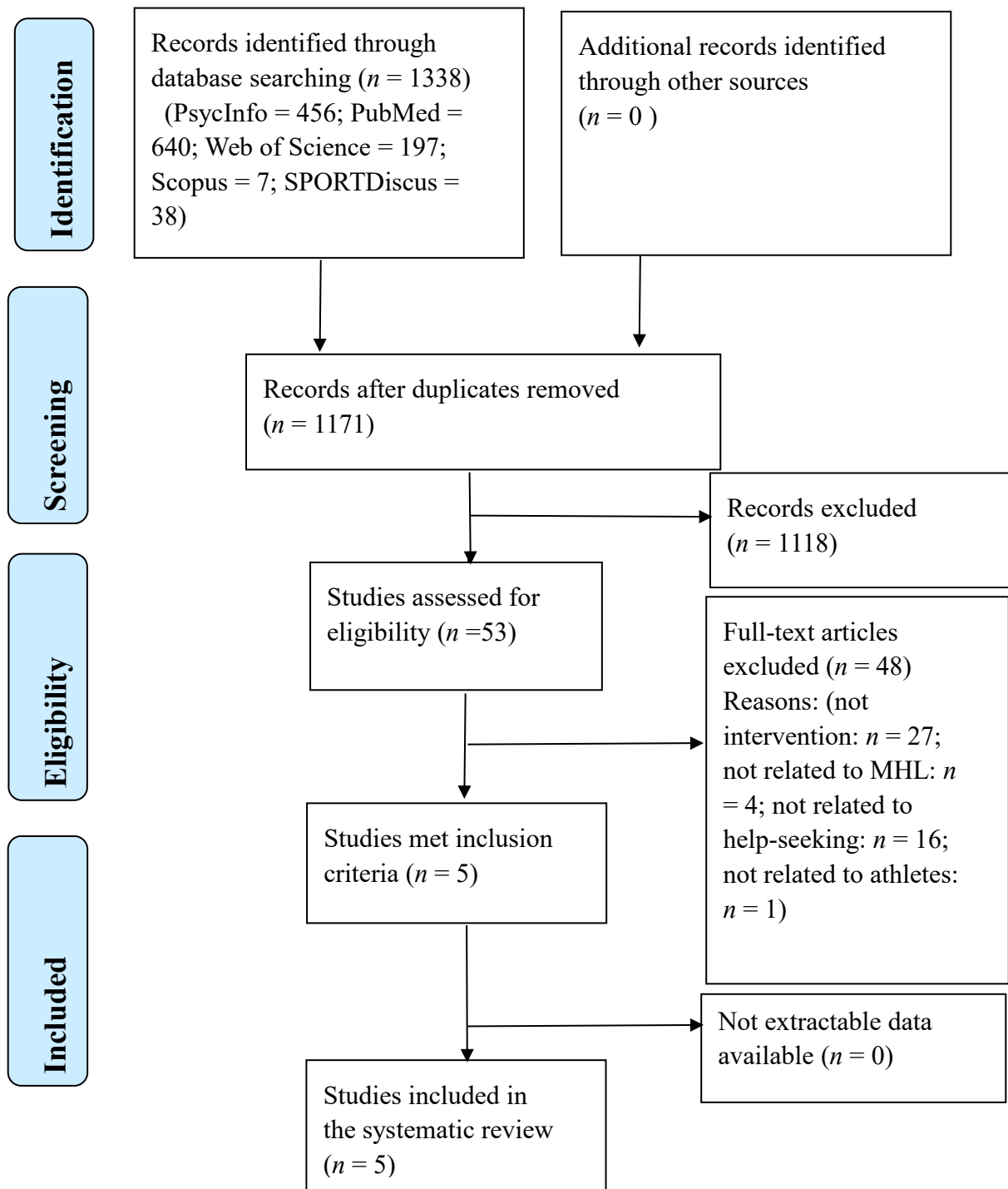


Figure 1 PRISMA 2009 flow diagram

Table 3.

*Characteristics of included programs and their studies*

First author (year)	Country	Athlete type	No. participants	% Female	Mean age (SD), range	Type of sport
Breslin et al. (2018a)	IR	Student-athletes	Pre: 100; Post: 100; Follow-up: 15	41%	20.78 ± 2.91; Range: Not reported	Soccer, Gaelic football, rugby, hockey, netball, and golf
Gulliver et al. (2012b)	AU	Elite athletes.	Pre:59; Post: 59; Follow-up: 40	72.9%	25.5 (SD: Not reported) (median 24.5); Range = 18 - 48	Not reported
Kern et al. (2017)	US	Student-athletes	Pre:652*; Post: 626	25.1% (unknown: 46.6%)	M (SD): Not reported Ranged = 18 - 23	Not reported
Pierce et al. (2010)	AU	Elite athletes.	Pre:275; Post: 96	Not reported	M (SD): Not reported The median age = 21; Range 15 - 50)	Football
Van Raalte et al. (2015)	US	Student-athletes	Pre: 153; Post: 146;	Pre: 70.5%; Post: 67.3%	19.63 (SD = 1.76); Range: Not reported	Baseball, fencing, football, basketball, soccer, lacrosse, rugby, skiing, softball, squash,

gymnastics, track and field,  
swimming and diving, tennis,  
golf, and volleyball.

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*Note.* -: Country: **AU**: Australia, **IR**: Ireland, **US**: United States of America;

\*: The Kern et al. Study reported 652 in the baseline sample characteristics, while reported 626 student-athletes completed the pre- and post-surveys in the abstract. To calculate the number of females and males, 652 were used in the pre-test.

Table 4.

*Methods of included programs and their studies*

First author (year)	Intervention Deliverer	Study design	Control group	Delivery method	Follow-up points	Duration Length * N sessions
Breslin et al. (2018a)	Experienced mental health and well-being tutors	CT	Active	Face-to-face	Post, 3-month*	1.25 hrs *1
Gulliver et al. (2012b)	N/A	RCT	Active	Online	Post, 3-month	Available 24 hrs a day, 7 days a week
Kern et al. (2017)	Members of the intervention team	Pre- and post- design	No comparison	Face-to-face	Post	1 h *1
Pierce et al. (2010)	A MHFA qualified instructor	CT	Unknown	Face-to-face	6-month	12 hrs
Van Raalte et al. (2015)	N/A	RCT	Active	Online	Post	1 day (online session lasted at least 10 mins)

Note: **RCT**: Randomized Controlled trial; **CT**: Controlled trial; **N/A**: Not applicable

\* Only 15 participants finished 3-month follow-up data collection, which not provided in the statistical analyses

### 3.3.2 Study Content of the Included Programmes and their Studies

The content of the interventions in the included studies is shown in Table 5.

Mental health and risk factors were highlighted in all five studies. Information on help-seeking and stigma was introduced in five (Breslin et al., 2018; Gulliver et al., 2012b; Kern et al., 2017; Pierce et al., 2010; Van Raalte et al., 2015) and four (Breslin et al., 2018a; Gulliver et al., 2012b; Kern et al., 2017; Van Raalte et al., 2015) studies, respectively. Mindfulness practice and resilience were included in Breslin et al. study (2018a), two effective approaches to depression were proposed in Gulliver et al. study (2012b) and how to support friends was discussed in Kern et al. study (2017). Information on referral was summarised in the study by Van Raalte et al. (2015).

Table 5.

*Intervention contents of included programs and their studies*

First author (year)	Summarize major elements
Breslin et al. (2018a)	(1) Mental health information; (2) seeking help; (3) mindfulness practice; and (4) resilience
Gulliver et al. (2012b)	(1) Mental health information; (2) seeking help; (3) stigma; and (4) two effective depression treatments
Kern et al. (2017)	(1) Mental health information; (2) seeking help; (3) stigma; and (4) supporting friends
Pierce et al. (2010)	(1) Mental health information; and (2) seeking help;
Van Raalte et al. (2015)	(1) Mental health information; (2) seeking help; (3) stigma; and (4) information about referral

### 3.3.3 Study Results of Included Programs and Their Studies

The results of the included studies are summarised in Tables 6 – 11. MHL, help-seeking and stigma-related outcomes were evaluated by four, four and three studies, respectively. Other outcomes were also examined, including well-being ( $N = 1$ ; Breslin et al., 2018a), resilience ( $N = 1$ ; Breslin et al., 2018a), psychological distress ( $N = 1$ , reported in the pre-test but not in the post-test and follow-up test; Gulliver et al., 2012b), supporting teammates ( $N = 1$ , Kern et al., 2017) and self-efficacy ( $N = 1$ , Van Raalte et al., 2015). The effects of the programmes on each key outcome are discussed below

**Effects on MHL.** Four eligible studies (Breslin et al., 2018a; Gulliver et al., 2012b; Kern et al., 2017; Van Raalte et al., 2015) described the results on MHL (see Table 6). Five instruments were used to evaluate MHL. Among these four studies, two studies (Kern et al., 2017; Van Raalte et al., 2015) reported statistically significant improvements in the level of MHL in athletes. Gulliver et al. (2012b) study reported significant improvements in depression literacy and anxiety literacy in the post-test and the 3-month follow-up test. Breslin et al. (2018a) study evaluated different dimensions of MHL and reported significant improvements in two dimensions, but not in the other dimensions. Three studies (Breslin et al., 2018a; Gulliver et al., 2012b; Van Raalte et al., 2015) reported small to large effect sizes. Two studies (Breslin et al., 2018a; Kern et al., 2017) were based on dichotomous outcome measures and did not report effect sizes.



Table 6.

*Effects of the interventions on mental health literacy*

Author (year)	Variable	Intervention group [mean (SD)]		Control group [mean (SD)]		Effect size
		Pre-test	Post-test/ follow-up test	Pre-test	Post-test/ follow-up test	
Breslin et al. (2018a)	Mental health knowledge	21.74 (3.0)	23.4 (2.2) <sup>a</sup>	22.86 (2.96)	23 (2.85) <sup>a</sup>	d <sup>a</sup> = .16***
	Grief	2.2	1.7 <sup>a</sup>	2.1	1.7 <sup>a</sup>	N/A
	Drug addiction	3.8	4.3 <sup>a</sup>	3.6	3.8 <sup>a</sup>	N/A
	Bipolar disorder	4.7	4.9 <sup>a</sup>	5	4.8 <sup>a</sup>	N/A
	Schizophrenia	4.5	4.6 <sup>a</sup>	4.9	4.8 <sup>a</sup>	N/A
	Stress	1.9	1.3 <sup>a</sup>	1.7	1.6 <sup>a</sup>	N/A
	Depression	4.9	4.9 <sup>a</sup>	4.9	4.9 <sup>a</sup>	N/A
Gulliver et al. (2012b)	Depression literacy	12.60 (3.63)	16.00 (3.50) <sup>a</sup> 14.71 (2.36) <sup>b</sup>	12.17 (3.33)	12.21 (4.73) <sup>a</sup> 11.67 (5.34) <sup>b</sup>	d <sup>a</sup> 0.88** d <sup>b</sup> = 0.74**

	Anxiety literacy	9.00 (3.53)	13.70 (4.88) <sup>a</sup>	8.08 (3.50)	9.57 (4.48) <sup>a</sup>	d <sup>a</sup> = 0.88**
			13.57 (4.16) <sup>b</sup>		10.13 (4.75) <sup>b</sup>	d <sup>b</sup> = 0.77**
Kern et al. (2017)	Adolescent Depression Knowledge: Q1	0.87 (0.34)	0.92 (0.27) <sup>a</sup>	-	-	N/A
	Adolescent Depression Knowledge: Q2	0.75 (0.43)	0.84 (0.37) <sup>a</sup>	-	-	N/A
	Adolescent Depression Knowledge: Q3	0.97 (0.18)	0.98 (0.13) <sup>a</sup>	-	-	N/A
Van Raalte et al. (2015)	Mental Health Referral Knowledge	6.83 (1.54)	7.26 (1.72) <sup>a</sup>	7.06 (1.38)	6.85 (1.70) <sup>a</sup>	d <sup>a</sup> = .24**

Note. \*p < .05, \*\*p < .01, \*\*\*p < .001; *a* and *b* denoted post-test and follow-up test, respectively;

Effect size of the Breslin et al. (2018a) study was calculated by the author; Q1, Q2, and Q3 meant the three-item of the questions which evaluated Adolescent Depression Knowledge designed by the researchers.

**Effects on help-seeking.** As shown in Tables 7 - 9, four studies (Breslin et al., 2018a; Gulliver et al., 2012b; Kern et al., 2017; Pierce et al., 2010) included help-seeking outcomes. None of the measures to evaluate help-seeking attitudes, intentions and behaviour were the same across the studies. Of these four studies, three evaluated help-seeking attitudes (Gulliver et al., 2012b; Pierce et al., 2010; Kern et al., 2017), two studies (Breslin et al., 2018a; Gulliver et al., 2012b) examined help-seeking intentions, and one study (Gulliver et al., 2012b) tested help-seeking behaviours, including formal and informal approaches.

For help-seeking attitudes, three studies reported improvements (see Table 7). Gulliver et al. study (2012b) reported that help-seeking attitudes in the MHL/destigmatisation condition were not significant compared with the control group in the post-intervention or the 3-month follow-up, with small effect sizes. Pierce et al. (2010) study showed significant improvements in help-seeking attitudes from different sources but did not provide an effect size. Kern et al. (2017) study reported that the participants significantly increased their help-seeking intentions, with a medium effect size.

In terms of help-seeking intentions (see Table 8), Breslin et al. (2018a) study reported that the participants significantly increased their help-seeking intentions, and Gulliver et al. (2012b) study showed that the intentions to seek help from formal and informal sources were not significant for the MHL/destigmatisation condition compared with the control group in the

post-intervention or 3-month follow-up. Small effect sizes were reported in the three studies mentioning help-seeking intention outcomes.

Changes in actual help-seeking behaviour in the post-test and follow-up test, including both formal and informal approaches, were only reported in Gulliver et al. (2012b). The results were not significant for the MHL/destigmatisation condition compared with the control group in the post-intervention or 3-month follow-up. The OR and 95% CI are presented in Table 9.

Table 7.  
*Effects of the interventions on help-seeking attitudes*

Author (year)	Variable	Intervention group [mean (SD)/ %]		Control group [mean (SD)/ %]		Effect size
		Pre-test	Post-test/ follow-up test	Pre-test	Post-test/ follow-up test	
Gulliver et al. (2012b)	Help-seeking attitudes	20.30	22.40 (3.34) <sup>a</sup>	21.92 (4.10)	21.14 (5.26) <sup>a</sup>	d <sup>a</sup> = .29
		(3.34)	20.63 (4.27) <sup>b</sup>		21.27 (5.16) <sup>b</sup>	d <sup>b</sup> = - .14
Pierce et al. (2010)	Help-seeking attitudes towards family member	79%	77% <sup>a</sup>	64%	-	N/A
	Help-seeking attitudes towards a mate	75%	73% <sup>a</sup>	68%	-	N/A
	Help-seeking attitudes towards football club leader	41%	41% <sup>a</sup>	26%	-	N/A
	Help-seeking attitudes towards a minister/priest	10%	8% <sup>a</sup>	11%	-	N/A
	Help-seeking attitudes towards telephone counselling	17%	22% <sup>a</sup>	15%	-	N/A
	Help-seeking attitudes towards	23%	25% <sup>a</sup>	25%	-	N/A

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		Internet				
	Help-seeking attitudes towards poster/pamphlets	24%	23% <sup>a</sup>	21%	-	N/A
	Help-seeking attitudes towards GP/family doctor	62%	63% <sup>a</sup>	64%	-	N/A
Kern et al. (2017)	Own help-seeking attitudes	2.24 (1.10)	2.91 (1.51) <sup>a</sup>	-	-	d <sup>a</sup> = .44***

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Note. \*p < .05, \*\*p < .01, \*\*\*p < .001; *a* and *b* denoted post-test and follow-up test, respectively;

The Pierce et al. (2010) study could not calculate the effect size, because the No. of participants of each group was not provided.

Table 8.

*Effects of the interventions on help-seeking intentions*

Author (year)	Variable	Intervention group [mean ( <i>SD</i> )]		Control group [mean ( <i>SD</i> )]		Effect size
		Pre-test	Post-test/ follow-up test	Pre-test	Post-test/ follow-up test	
Breslin et al. (2018a)	Intentions to engage with someone with a mental health problem	16.57 (2.44)	17.75 (2.41) <sup>a</sup>	17.57 (2.68)	17.59 (3.0) <sup>a</sup>	$d^a = .06^{***}$
Gulliver et al. (2012b)	Help-seeking intentions from formal sources	4.05 (1.52)	4.10 (1.29) <sup>a</sup> ; 4.19 (1.60) <sup>b</sup>	4.50 (1.69)	3.79 (1.81) <sup>a</sup> ; 4.10 (1.84) <sup>b</sup>	$d^a = .20$ ; $d^b = .05$
	Help-seeking intentions from informal sources	5.00 (0.92)	5.12 (0.81) <sup>a</sup> ; 4.78 (0.93) <sup>b</sup>	5.58 (0.86)	5.17 (1.21) <sup>a</sup> ; 5.15 (1.12) <sup>b</sup>	$d^a = -.04$ ; $d^b = -.36$

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; *a* and *b* denoted post-test and follow-up test, respectively;

Effect size of the Breslin et al. (2018a) study was calculated by the author.

Table 9.

*Effects of the interventions on help-seeking behaviors*

Author (year)	Variable	Intervention group [n (%)]		Control group [n (%)]		Effect size
		Pre-test	Post-test/ follow-up test	Pre-test	Post-test/ follow-up test	
Gulliver et al. (2012b)	Actual help-seeking behaviors from formal help	2 (20%)	5 (50%) <sup>a</sup> ; 3 (38%) <sup>b</sup>	3 (25%)	1 (7%) <sup>a</sup> ; 3 (20%) <sup>b</sup>	OR = 57.38, 95% CI 0.85–3868.09 <sup>a</sup> ; OR = 3.48, 95% CI 0.10–122.32 <sup>b</sup>
	Actual help-seeking behaviors from informal help	6 (60%)	7 (70%) <sup>a</sup> ; 6 (75%) <sup>b</sup>	6 (50%)	9 (64%) <sup>a</sup> ; 12 (80%) <sup>b</sup>	OR = 0.74, 95% CI 0.03–19.12 <sup>a</sup> ; OR = 0.21, 95% CI 0.01–7.79 <sup>b</sup>

Note: CI, confidential interval; \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ;

*a* and *b* denoted post-test and follow-up test, respectively.



**Effects on stigma.** Three studies (Gulliver et al., 2012b; Kern et al., 2017; Pierce et al., 2010) discussed stigma using four types of measures. Two studies (Gulliver et al., 2012b; Kern et al., 2017) reported that the intervention had a significant positive effect on the level of stigma of the participants, and Pierce et al. (2010) study showed no significant reduction. Gulliver et al. (2012b) study found that two types of stigma, anxiety stigma and depression stigma, were significantly reduced in the post-intervention and 3-month follow-up tests. Both studies reported small to medium effect sizes for stigma (see Table 10).

**Effects on additional outcomes.** In the five studies identified, additional outcomes were examined, including well-being, resilience, psychological distress, supporting teammates and self-efficacy (see Table 11). Psychological distress was only reported in the pre-test (Gulliver et al., 2012b). Breslin et al. study (2018a) showed that well-being and resilience were not significantly enhanced, with small effect sizes. Kern et al. study (2017) reported significant improvements in supporting teammates, with small to medium effect sizes. Finally, Van Raalte et al. study (2015) reported significant improvements in self-efficacy, with a medium effect size.

Table 10.

*Effects of the interventions on stigma*

Author (year)	Variable	Intervention group [mean (SD)/%]		Control group [mean (SD)/%]		Effect size
		Pre-test	Post-test/ follow-up test	Pre-test	Post-test/ follow-up test	
Gulliver et al. (2012b)	Depression stigma	11.50 (2.76)	7.50 (4.95) <sup>a</sup> 7.71 (3.77) <sup>b</sup>	9.50 (4.32)	8.93 (6.39) <sup>a</sup> 8.13 (4.70) <sup>b</sup>	d <sup>a</sup> = .25*** d <sup>b</sup> = .09***
	Anxiety stigma	8.50 (3.27)	5.40 (4.77) <sup>a</sup> 3.71 (3.35) <sup>b</sup>	6.42 (6.07)	5.57 (4.36) <sup>a</sup> 6.00 (5.07) <sup>b</sup>	d <sup>a</sup> = .03** d <sup>b</sup> = .53**
Kern et al. (2017)	Stigma: Q1	4.69 (0.57)	4.48 (0.53) <sup>a</sup>	-	-	d <sup>a</sup> = .20***
	Stigma: Q2	0.29 (0.71)	0.34 (1.02) <sup>a</sup>	-	-	d <sup>a</sup> = .06
Pierce et al. (2010)	Stigma attitudes: Q3	70%	70% <sup>a</sup>	-	-	N/A
	Stigma attitudes: Q4	60%	60% <sup>a</sup>	-	-	N/A
	Stigma attitudes: Q5	65%	65% <sup>a</sup>	-	-	N/A
	Stigma attitudes: Q6	Not reported	45% <sup>a</sup>	-	-	N/A

Note: \*p < .05, \*\*p < .01, \*\*\*p < .001; *a* and *b* denoted post-test and follow-up test, respectively;

The Pierce et al. (2010) study could not calculate the effect size, because the No. of participants in each group was not provided;

Q1 and Q2 meant the two-item of the questions which evaluated the stigma;

Q3, Q4, Q5 and Q6 meant the four-item of the questions which evaluated the stigma attitudes towards a depressed person.

Table 11.  
Effects of the interventions on additional outcomes

Author (year)	Variable	Intervention group [mean ( <i>SD</i> )]		Control group [mean ( <i>SD</i> )]		Effect size
		Pre-test	Post-test/ follow-up test	Pre-test	Post-test/ follow-up test	
Breslin et al. (2018a)	Resilience	3.39 (0.60)	3.37 (0.74) <sup>a</sup>	3.66 (0.72)	3.62 (0.78) <sup>a</sup>	d <sup>a</sup> = .33
	Well-being	26.49 (3.67)	27.32 (4.31) <sup>a</sup>	26.36 (4.05)	26.81 (4.85) <sup>a</sup>	d <sup>a</sup> = .11
Kern et al. (2017)	Supporting teammate:Q1	2.79 (1.01)	3.10 (0.95) <sup>a</sup>	-	-	d <sup>a</sup> = .30***
	Supporting teammate:Q2	2.62 (0.87)	3.00 (0.72) <sup>a</sup>	-	-	d <sup>a</sup> = .47***
	Supporting teammate:Q3	2.75 (1.23)	3.41 (0.73) <sup>a</sup>	-	-	d <sup>a</sup> = .70***
Van Raalte et al. (2015)	Self-efficacy	8.30 (1.94)	9.03 (1.67) <sup>a</sup>	8.15 (1.99)	7.69 (2.77) <sup>a</sup>	d <sup>a</sup> = .59 **

Note. \*p < .05, \*\*p < .01, \*\*\*p < .001; *a* and *b* denoted post-test and follow-up test, respectively;

Q1, Q2, and Q3 meant the three-item of the questions which evaluated the supporting teammate.

### 3.3.4 Risk of Bias in Included Studies

Following the Cochrane guidelines, the risk of bias in the eligible studies with RCTs and non-RCTs is summarised in Tables 12 - 13, respectively. For the two RCT studies (Gulliver et al., 2012b; Van Raalte et al., 2015)(See Figure 2), random sequence generation was conducted in both studies, but one did not report the randomisation method (Van Raalte et al., 2015). The methods of allocation concealment were mixed: Gulliver et al study (2012b) provided specific information and was rated as low risk of bias, and Van Raalte et al. study (2015) did not provide this information and was rated as unclear. As with allocation concealment, the methods for blinding participants and personnel were mixed: Gulliver et al study (2012b) with blinded participants was rated as low risk of bias and Van Raalte et al. study (2015) was rated as unclear. However, outcome assessment was discussed in the two studies classified as unclear for blinding. Missing data, selective reporting and other bias were controlled by both studies with low risk of bias. In summary, as shown in Figure 2, these two studies were rated as low risk (Gulliver et al., 2012b) and unclear risk of bias (Van Raalte et al., 2015), respectively.

Regarding the two non-randomised studies (Breslin et al., 2018a; Pierce et al., 2010) and the study with the pretest-posttest design (Kern et al., 2017), according to the Newcastle-Ottawa quality assessment scale (Stang, 2010; Wells et al. 2008), the study by Breslin et al. (2018a) with seven stars and that

by Kern et al. (2017) with six stars were classified as low risk, and Pierce et al. study (2010) with three stars was classified as high risk of bias. For the two non-randomised studies, the case definition, the representativeness of the cases and the selection of the controls were discussed. The definition of the controls, comparability (the study controls for age), the same method of ascertainment for the cases and controls and the non-response rate were only satisfied by Breslin et al. (2018a). Exposure ascertainment was not achieved by either study (Breslin et al., 2018a; Pierce et al., 2010). For the pretest-posttest design study (Kern et al., 2017), the representativeness of the exposed cohort (whether it is truly representative of the average gender and education in the community), the selection of the non-exposed cohort, ascertainment of exposure and the independent blind assessment of outcomes were achieved. However, comparability (the study does not control for the most important factor), follow-up long enough for the outcomes to occur and adequacy of follow-up of cohorts were not reported.

Table 12.

*Risk of bias for randomized studies using Cochrane risk-of-bias tool*

Study	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Classification
Gulliver et al. (2012b)	+	+	+	?	+	+	+	+
Van Raalte et al. (2015)	?	?	?	?	+	+	+	?

Note: Criteria: 1) Random sequence generation; 2) Allocation concealment; 3) Blinding of participants and personnel 4) Blinding of outcome assessment; 5) Incomplete outcome data; 6) Selective reporting; 7) Other bias;

+ = Low risk of bias; - = High risk of bias ; ? = Unclear risk of bias;

Table 13.

*Risk of bias for non-randomized studies using the Newcastle-Ottawa quality assessment scale*

Study	Selection	Comparability	Exposure (for study 1 and 3)/ outcome (for study2)	Classification
Breslin et al. (2018a)	****	*	**	Low risk of bias
Kern et al. (2017)	*****	-	*	Low risk of bias
Pierce et al. (2010)	***	-	-	High risk of bias

Note: \*stars identify the level of the quality of the study ; Remarks: The more stars\* each component gets, the higher quality its represent; A maximum of one 'star' for each item within the 'Selection' and 'Exposure/Outcome' categories; maximum of two 'stars' for 'Comparability'.

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
Gulliver 2012	+	+	+		+	+	+
Van Raalte 2015					+	+	+

Figure 2 Summary of risk of bias judgments for each RCT study.

Note: + =Low risk of bias

### **3.3.5 Outcome Measure Validity Assessment**

Most studies measured MHL objectively, usually using true or false questions, with two studies (Breslin et al., 2018a; Gulliver et al., 2012b) reporting acceptable reliability and two studies (Kern et al., 2017; Van Raalte et al., 2015) not describing reliability and validity. In addition, one study by Breslin et al. (2018a) evaluated different dimensions of MHL, and one dimension was measured using a Likert scale with good reliability and validity ( $\alpha = 0.55$ ).

Similarly, for the help-seeking instruments, two studies (Breslin et al., 2018a; Gulliver et al., 2012b) had good reliability and validity, and the other two (Kern et al., 2017; Pierce et al., 2010) did not provide these statistics. In addition, stigma was measured using three types of measures, and two studies (Kern et al., 2017; Pierce et al., 2010) did not report evidence of reliability and validity. Finally, for additional outcomes, only resilience in Breslin et al. study (2018a) was assessed for reliability and validity; the other outcomes were not.

## **3.4 Discussion**

The purpose of this systematic review was to provide evidence of the effectiveness of MHL interventions enhancing MHL, and help-seeking attitudes, intentions, and behaviours, as well as reducing stigmas in athletes. All studies meeting the inclusion criteria were systematically reviewed to offer



recommendations to researchers in the process of designing and evaluating MHL studies.

We searched a range of electronic databases and identified five studies: two RCTs, two non-RCTs and one pretest-posttest design study with no control group. It was difficult to draw conclusions about MHL interventions from these studies due to the small number of studies and the considerable heterogeneity between the interventions used regarding content and delivery. In addition, the frequency and duration of the sessions for each programme varied from 10 minutes (Van Raalte et al., 2015) to 12 hours (Pierce et al., 2010). Moreover, only one study by Gulliver et al. (2012b) implemented a follow-up test, making it impossible to determine whether the improvements due to the interventions were maintained over time. Furthermore, for the two RCT studies, one was classified as unclear risk of bias (Van Raalte et al., 2015) and the other as low risk (Gulliver et al., 2012b). For the non-randomised studies, the risk of bias of two studies was low (Breslin et al., 2018a; Kern et al., 2017), while that of one study was high (Pierce et al., 2010). As a result, there was insufficient evidence to report what type of programme was most effective or promising, so the effectiveness of MHL programmes for athletes remains to be established.

### **3.4.1 Effects of Studies on Mental Health Literacy Outcomes**

There was positive evidence that MHL training improved MHL, such as recognition of depression or anxiety disorders and referral knowledge in four

interventions (Breslin et al., 2018a; Gulliver et al., 2012b; Kern et al., 2017; Van Raalte et al., 2015). Only two studies reported effect sizes, limiting the explanation of the interventions (Gulliver et al., 2012b; Van Raalte et al., 2015). Depending on the calculations of the effect sizes, this could lead to small to large improvements in literacy. The accurate identification of a person suffering from depression or anxiety was enhanced up to three months after the interventions, and the effects were still significant (Gulliver et al., 2012b). It should be noted that Gulliver et al. study (2012b) was the only study with follow-up results. Thus, due to the lack of methodological rigour across the studies, it was difficult to draw conclusions about the long-term effect of sport-based MHL training on the improvement of MHL. Further research is needed to test whether MHL programmes are an effective approach to promote mental health in the athletic population.

### **3.4.2 Effects of the Studies on Help-Seeking Outcomes**

Two studies revealed non-significant improvements in help-seeking attitudes towards mental health issues in the short (Gulliver et al., 2012b; Kern et al., 2017; Pierce et al., 2010) and long terms (Gulliver et al., 2012b). Gulliver et al. (2012b) reported a small effect size for help-seeking attitudes in the post-test and a null effect in the follow-up test. In addition, Kern et al. study (2017) reported a medium effect size for help-seeking attitudes in the short term.

For help-seeking intentions, Breslin et al. study (2018a) found an increase in

intentions to help those suffering from mental health issues in the short term, with a small effect size. Gulliver et al. study (2012b) also had a null effect for help-seeking intentions from informal sources in the short and long term and a small effect size for formal channels in the short and long term. Only Gulliver et al. study (2012b) reported a null effect for help-seeking behaviour, both informal and formal, in the short and long terms. Overall, except for help-seeking attitudes in the long term and help-seeking intentions from informal sources in the short and long terms (Gulliver et al., 2012b), there was no evidence of negative effects on help-seeking from the interventions.

Help-seeking behaviour was only evaluated in Gulliver et al. study (2012b), which showed no improvement in informal and formal behaviours. This is consistent with previous systematic reviews related to help-seeking in another field (Xu et al., 2018). This may be due to the fact that help-seeking behaviour is expected if people experience mental health symptoms and are therefore likely to feel the need to seek professional help (Gulliver et al., 2012b). In addition, as suggested by WHO (2009), informal help and self-help are necessary to meet all aspects of mental health needs. It should be noted that there was insufficient evidence of the effects of the interventions on informal help-seeking. Moreover, research has shown that some people prefer to deal with mental health issues through self-reliance (Wei et al., 2020; Xu et al., 2018). Future interventions should facilitate the use of self-help strategies and informal approach programmes

or materials should be used (Rickwood & Bradford, 2012; Scott et al., 2015; Xu et al., 2018)

### **3.4.3 Effects of the Studies on Stigma Outcomes**

Three studies discussed stigma (Gulliver et al., 2012b; Kern et al., 2017; Pierce et al., 2010). The results of two studies demonstrated a reduction in the stigma in the short (Gulliver et al., 2012b; Kern et al., 2017) and long term (Gulliver et al., 2012b), with small to medium effect sizes. The third study (Pierce et al., 2010) revealed no significant reduction in stigma. In addition, the validity of only two measures was acceptable in one study (Gulliver et al., 2012b) with low risk of bias, and the other two (Kern et al., 2017; Pierce et al., 2010) did not provide evidence of instrument validity (high risk of bias).

Previous results have revealed that stigma, including public stigma and self-stigma, are the main barriers to seeking professional help (Bonabi et al., 2016; Mojtabai et al., 2011; Schnyder et al., 2017). Unfortunately, the interventions reporting effects on stigma did not identify the types of stigma. An important step for future MHL research in sport will be to evaluate whether a higher level of MHL in athletes can reduce public stigma and self-stigma to further enhance the adoption of appropriate help-seeking behaviour. In addition, with regard to methodological problems related to measurement, the results of this review suggested that training athlete role models to overcome stereotypes and provide destigmatising materials in programmes is an acceptable intervention method to

reduce stigma (Breslin et al., 2018a).

#### **3.4.4 Effects of the Studies on Additional Outcomes**

Additional outcomes, including well-being, resilience, psychological distress, supporting teammates and self-efficacy, were examined in the five eligible studies. However, psychological distress was only reported in the pre-test and not in the post-test and follow-up test (Gulliver et al., 2012b). In terms of positive mental health outcomes, well-being and resilience did not significantly improve after the intervention in Breslin et al. study (2018a). The assumption that enhancing MHL can contribute to improving mental health outcomes was not supported in this review. This is consistent with the results of a systematic review in the school setting (Wei et al., 2013). Future studies should test the robustness of research designs based on the Cochrane approach (Higgins & Green, 2008) to verify the effects of mental health outcomes in MHL interventions.

In terms of confidence in helping others or seeking help, two studies provided evidence for two aspects. First, for supporting teammates, Kern et al. study (2017) demonstrated that the intervention was beneficial in enhancing the confidence of the participants in their ability to support their teammates, with small to medium effect sizes. Second, regarding self-efficacy, Van Raalte et al. study (2015) found that the intervention was conducive to improving confidence in providing and seeking help, with a medium effect size. In line with research with students, confidence in helping other students with mental health issues has

been reported as one of the outcomes of several studies (Jorm et al., 2010a; Moor et al., 2007; Kidger et al., 2016; Kutcher et al., 2016a; Yamaguchi et al., 2020). However, the relationship between confidence in supporting others and actual helping behaviour requires further exploration (Yamaguchi et al., 2020). One longitudinal study by Rossetto et al. (2016) showed that compared with individuals with low confidence in helping, those with high confidence in helping people with mental health issues can predict their subsequent behaviour. However, research on how confidence turns into actual helping behaviour is still needed (Yamaguchi et al., 2020). In addition, the measure for supporting teammates was developed by Kern et al. study team (2017) and had a high risk of bias. Therefore, further studies are needed to validate the questionnaires.

### **3.4.5 Improving the Methodological Quality of Studies**

Although the number of studies on MHL programmes for athletes has increased, only two randomised studies have been conducted. A randomised study design is believed to provide relatively reliable evidence (Yamaguchi et al., 2020). However, in this study, one RCT study (Gulliver et al., 2012b) was classified as low risk of bias and another (Van Raalte et al., 2015) was classified as unclear (see Table 12). In terms of blinding the outcome assessment, the methodological concerns related to this unclear risk of bias should be addressed. The mixed results in terms of random sequence generation, allocation concealment and blinding of participants and personnel should also be addressed. Future RCT

designs should follow the CONSORT procedure (Schulz et al., 2010) to reduce the risk of bias based on random sequence generation, allocation concealment, blinding of participants and personnel and assessment of outcomes.

Two studies with a controlled trial and one with a pretest-posttest design were evaluated using the Newcastle-Ottawa quality assessment scale (Wells et al., 2008). Improving the quality of studies with non-randomised designs is crucial to create an evidence base for MHL programmes (Yamaguchi et al., 2020).

According to the Newcastle-Ottawa quality assessment (Wells et al., 2008), confounding variables should be controlled. In addition, participants, outcome assessors and withdrawal rates should be blinded. For possible confounding variables, previous studies have shown that gender can be associated with a low level of MHL, a high level of stigma and a lower likelihood of help-seeking (Seidler et al., 2016; Swann et al., 2018), which should be considered when controlling for confounding variables. Several methods can be used to control for confounders, such as matching, stratification and regression modelling, to reduce the risk of bias of confounding variables (Reeves et al., 2008). In other words, the issues discussed above should be seriously addressed and the methods should be reported more clearly (Yamaguchi et al., 2020).

Few validated measures were used in the studies reviewed, which limited the generalisability of the results. To evaluate MHL, questionnaires were developed for the target population presented above, notably the Mental Health Literacy

Scale (O'Connor & Casey, 2015), the Multicomponent Mental Health Literacy Scale (Jung et al., 2016), and the Mental Health Literacy Questionnaire (Dias et al., 2018). Future studies should apply these reliable and valid measures tested with athletes to assess MHL. In addition, help-seeking and stigma measures were used based on self-developed questionnaires, which is recognised as a study limitation for programme evaluation. Therefore, questionnaires with acceptable reliability and validity should be used in future studies to improve their quality.

#### **3.4.6 Consideration for Intervention Delivery Methods**

The frequency and duration of the sessions for each programme varied across the studies. For face-to-face interventions, at least one hour with one session was implemented (Kern et al., 2017). For the online intervention session lasted at least 10 minutes (Van Raalte et al., 2015). For future MHL programmes with athletes, the frequency and duration of the sessions, including their effectiveness in improving mental health help-seeking and practical situations, should be taken into consideration, which will make future interventions more effective when tailored to specific target groups.

Three studies were delivered through traditional face-to-face interventions (Breslin et al., 2018a; Kern et al., 2017; Pierce et al., 2010), and two interventions were conducted online (Gulliver et al., 2012b; Van Raalte et al., 2015). For help-seeking behaviour, it was not possible to compare the effectiveness of face-to-face interventions and online interventions, as only one online intervention



(Gulliver et al., 2012b) was evaluated in this review. However, studies have shown that online interventions are not as effective as face-to-face interventions for behaviour change (Wantland et al., 2004; Xu et al., 2018). Therefore, future research should further investigate the effectiveness of online interventions to enhance mental health help-seeking.

### **3.4.7 Limitations and Recommendations**

This review has several limitations. The quality of the studies varied, so the results should be interpreted with caution. Many studies applied outcome measures with unclear validity. In addition, some statistical reports were not calculated for unknown information. No meta-analysis was conducted because the operationalisation, measurement and statistical reporting of the constructs lacked consistency and methodological rigour. Moreover, relevant studies of athletes in other languages may not have been included in this review. Furthermore, we have not used Medical Subject Headings (MeSH) terms in Medline and equivalent terms in the searched databases. Therefore, some relevant studies may have been missed. Future studies should involve these in search strategies to include more potential studies.

Despite these limitations, the results have practical implications. Interventions with integrative strategies that focus on several barriers to help-seeking should be developed. In addition, psychoeducation designed to enhance MHL should lead to improvements in help-seeking. In addition, reducing

the stigma associated with mental health issues or negative attitudes towards help-seeking should be included in programme development (Xu et al., 2018).

This review also highlighted significant research gaps. First, high-quality RCTs and non-randomised studies with large representative samples and long-term follow-up assessments are needed to provide evidence of the efficacy of interventions. Future research should discuss the active components and cost-effectiveness of mental health help-seeking interventions (Xu et al., 2018). Second, most studies did not use reliable and valid measurements to assess the relevant outcomes. Third, only one study discussed mental health behaviour and the programme was supported by the process framework of Rickwood et al. (2005) for help-seeking theory. In the sport context, the theory of planned behaviour (Ajzen, 1991) was applied in the MHL intervention for coaches (Breslin et al., 2017a). Moreover, the health belief model (Maiman & Becker, 1977) was used to explore student-athletes' mental health help-seeking experience (Bird et al., 2018). Therefore, theory-based guidelines for developing and evaluating interventions should be taken into account in future programmes. Finally, all included studies were conducted in Western countries. More research in Eastern countries is needed.

Research on MHL in sport to improve MHL, help-seeking attitudes, intentions and behaviour and to reduce stigma is still in its early stage. However, it is encouraging to observe the promising results of relevant studies. Future

research should take into account the complexity of the sport context when considering appropriate research methodologies for programme evaluation.

### **3.5 Conclusion**

MHL intervention could enhance MHL, help-seeking attitudes and intentions, stigmas, while not increase help-seeking behaviors for now. Because MHL programmes are a relatively new and developing research field, researchers and sport practitioners should emphasise that there is still much work to be done in future studies. Although evidence was found in the programmes available, some studies had high risk of bias. Therefore, the methodological quality of studies, including RCTs and other designs, should be improved in future research. Thus, future research on MHL programmes for athletes should focus on theory-based programme development, longitudinal studies, blinded approaches, larger samples of male and female athletes and validated measurement tools.

# **CHAPTER 4. A Qualitative Investigation of the Mental Health Literacy, Experiences and Help-Seeking Behaviours among Chinese Elite Athletes**

## **4.1 Study Purpose**

With regard to Chinese culture and the Chinese sport context, there is insufficient knowledge of mental health experience and knowledge, mental health help-seeking behaviour, and potential factors influencing help-seeking behaviour in elite athletes. The study 2 aims to conduct a qualitative study to explore the existing help-seeking behaviours and the factors that may influence help-seeking behaviours of Chinese elite athletes viewed from the perspective of athletes, coaches and team officials. This study would be regarded as exploratory and preparation for the third study. Considering Chinese culture and the unique Whole-Nation sport system, the results of this study could provide the new information and original evidence on designing MHL intervention program in Chinese elite athletes.

## **4.2 Method**

### **4.2.1 Philosophical Orientation**

Researchers should acknowledge their epistemological and philosophical positions when performing qualitative data analyses (Willig, 2013). In this study,

the principles of critical realism was followed (Bhaskar, 1989), which is based on a realist ontology and a modified dualist/objectivist epistemology. Critical realism assumes that subjects' understanding of truth cannot be objectively or fully measured, and it emphasises that the influence of the researcher should be controlled to produce knowledge as objectively as possible (Poucher et al., 2019). Therefore, critical realism allowed us to acquire insights into the experiences, knowledge of mental health and help-seeking behaviours of the participants, and to do so with consideration of various perspectives.

#### **4.2.2 Participants**

Elite athletes, coaches, and team officials from different sport training centres in two Chinese provinces were invited. Interviewees were selected using the following criteria: (a) elite athletes competing at provincial, national, or international levels; (b) coaches competing at provincial, national, or international levels; and (c) team officials in administrative roles who served as heads of sport training centres. Furthermore, all participants from individual sport, because Chinese elite athletes from individual sport generally have more mental health issues and lower mental well-being (Yang, 2015). No incentives were given for participation and they can voluntarily decide whether or not to participate. Conditional on the acceptance of invitation, interview appointments were made. As athletes in individual sports have been shown to experience a higher incidence of mental health symptoms than athletes in team sports (Pluhar et al., 2019; Rice

et al., 2016; Yang, 2015), this study involved elite athletes in individual sports only.

The sampling process stopped when the number of interviewed participants reached the saturation of qualitative research (Mason, 2010). In total, 20 athletes ( $M$  age = 22.5,  $SD$  = 4.37, range = 15 – 32; male = 10), 12 coaches ( $M$  age = 39.08;  $SD$  = 10.56, range = 26 – 59; male = 8) and 5 team officials ( $M$  age = 47;  $SD$  = 4.47, range = 42 – 54 years; all males) took part in the interviews. The recruited athletes were from shooting (3 females and 4 males), badminton (2 females), table tennis (2 females and 2 males), boxing (1 male), weightlifting (1 female and 1 male), swimming (1 male), gymnastics (2 males), and long jump (1 male), with training experience ranged from 4 to 15 years ( $M$  = 10.32;  $SD$  = 3.09). The elite athletes either competed at the national ( $n$  = 11) or international levels ( $n$  = 9). The recruited coaches were from shooting (1 female and 2 males), badminton (2 males), gymnastics (1 male), jump (2 males), martial (1 male), diving (1 male), and fencing (2 males). The coaches had between 3 and 30 years ( $M$  = 13.17;  $SD$  = 9.73) of coaching experience, and competed at the regional ( $n$  = 5), national ( $n$  = 2) or international levels ( $n$  = 5). The team officials were the heads of the sports programmes for the participating athletes and coaches, namely badminton, table tennis, martial arts, track and field, and water sports programmes.

### 4.2.3 Procedure

Face-to-face semi-structured interviews were conducted to explore elite athletes' experiences of mental health issues, MHL, potential factors related to help-seeking behaviours. Signed letters of consent were received from the participants before the interview. All of the participants were promised that their data would be kept confidential. No participants refused to participate or dropped out of the study after the commencement of the interview, although they were allowed to drop out of the interview if any topic they felt uncomfortable or unwilling to discuss.

The interview guidelines included open-ended questions regarding the experience of mental health issues caused by training and competition, knowledge of mental health issues and risk factors, knowledge of help available, elite athletes' help-seeking attitudes, intentions and behaviours, and related factors that may affect their behaviours. Therefore, the interview questions involved (1) what do you think mental health is? (2) have you/ athletes have mental health experience? (3) what are the help-seeking behaviours among athletes? (4) what are the athletes' knowledge of mental health issues and risk factors? (5) what is the help-seeking attitudes and intentions among athletes? (6) are there any other factors that impact help-seeking behaviours? They were encouraged to be as open and honest as possible concerning their past experiences. Because participants were not informed about the operationalised definition of mental health issues, they may hold different understanding of

mental health issues.

The interviews with the athletes and coaches were conducted in the counselling rooms after training sessions. The interviews with the team officials were conducted in their offices. The durations of the interviews varied from 21.42 to 60.2 minutes. A code was used for each participant, and the participants' names were not mentioned in the results or the reports. Ethical approval was received from the Research Ethics Committee of Hong Kong Baptist University.

#### **4.2.4 Data analysis**

The interviews were audio-taped, and all of the audio-recordings were later transcribed verbatim. The data were analysed with the assistance of NVivo Qualitative Data Analysis Software, Version 11 (QSR International Pty Ltd 2015). The content analysis approach was followed in line with the analytic induction method recommended by Elo and Kyngäs (2008). Specifically, there are three steps: creating tags, creating categories and analysing categories. First step, meaning units in the form of tags were created representing useful information from the participants. This procedure involved dividing the interview texts into meaning units and tagging them with temporary names that represented the key concepts of the text segments. Second step, categories were created by combining similar meanings and to determine labels that would describe the broader topics for each related cluster of tags. Tags may belong to more than one category. Third, the step of analysing categories involved identifying the similarities and



differences in content between categories (Côté & Salmela, 1994; Côté, Salmela, Baria, & Russell, 1993). The whole coding process was conducted by two independent coders, separately. Discrepancies were resolved via discussion between the two coders to reach an agreement (Wood et al., 2017).

Yardley's four guidelines: sensitivity to context, commitment and rigor, transparency and coherence, and impact and importance (Smith, 2015; Yardley, 2000) were also followed to improve the trustworthiness. Specifically, considering sensitivity, inductive processes (text relevant to the research aims was identified and organised into repeating ideas, then general themes) was used for data analysis, in which the meaning units and themes were extracted and defined based on a careful examination of the meanings generated by the participants. Regarding commitment and rigor, the researchers showed an in-depth engagement with the topics of mental health and help-seeking, conducted a thorough data collection, had expertise and experience in the methods used, and undertook a detailed and in-depth analysis of the qualitative data. From the perspectives of transparency and coherence, as triangulation data collection for data validation (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014), two independent coders, and comparison with previous quantitative results enabled transparency and coherence, which further confirming the results and offering different perspectives. Regarding impact and importance: the results of this study provided additional information to the previous quantitative study and contributed to the future design of MHL interventions for elite athletes.

### **4.3 Results**

Six main themes involving fourteen sub-themes emerged from the content analysis. Six themes were (1) help-seeking behaviours; (2) mental health experiences; (3) mental health literacy; (4) help-seeking attitudes; (5) help-seeking intentions; and (6) socio-cultural factors influencing athletes' mental health and help-seeking. The results in terms of themes, sub-themes and condensed meaning units are presented in Table 14 (The quotation from different perspectives of participants of each meaning units were shown in Appendix 2).

Table 14.

*The themes, sub-themes, and condensed meaning units (MU) of mental health experiences, literacy, and help-seeking behaviours of Chinese elite athletes*

Themes	Sub-themes	Condensed MU
Help-seeking behaviours	Seeking help from others	MU 1: Seeking help through formal approaches; MU 2: Seeking help through informal approaches;
	Self-help strategies	MU 1: Positive self-help strategies; MU 2: Negative self-help strategies;
Experiences of mental health	Experiences of mental health issues	MU 1: Depressed mood; MU 2: Competitive anxiety; MU 3: Sleep-related concerns; MU 4: Weight control issues;
	Impact on performance	MU 1: Performance;
Mental health literacy	Knowledge of mental health	MU 1: Inadequate knowledge of mental health ;
	Approaches to acquire mental health knowledge	MU 1: Limited approaches to acquire mental health knowledge; MU 2: Some approaches to acquire mental health knowledge
	Knowledge of help available	MU 1: Limited knowledge of help available; MU 2: Knowledge of help available;
Help-seeking attitudes	Stigma	MU 1: Public stigma; MU 2: Self-stigma;

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	Positive attitudes	MU 1: Positive attitudes
Help-seeking intentions	Help-seeking intentions from others	MU 1: Seeking help through formal approaches; MU 2: Seeking help through informal approaches;
	Self-help intention	MU 1: Self-help intention;
Socio-cultural factors influencing athletes' mental health and help-seeking	Social support	MU 1: Support from coaches, teammates, friends, parents, leaders and sports psychologists;
	Chinese sports system	MU 1: Good relationships with others; MU 2: Bad relationships with others; MU 3: Positive training environment; MU 4: Negative training environment;
	Chinese cultural background	MU 1: Positive influence of Chinese culture; MU 2: Negative influence of Chinese culture

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#### **4.3.1 Theme1: Help-seeking behaviours**

The interviewees in all three groups agreed that some elite athletes suffering from mental health difficulties generally prefer to seek help from informal channels such as parents, friends, or teammates, before turning to formal channels such as coaches or sports psychologists. Furthermore, they agreed that self-help is another strategy adopted by some elite athletes.

##### ***Seeking help from others***

The interviewees in all three groups reported that when elite athletes experience mental health issues, they generally seek support from someone whom they trust and regard as supportive. Their usual priority in seeking help is to use informal channels (i.e., teammates, friends, or parents), followed by formal channels (i.e., coaches or sports psychologists). Some of the team officials believed that for issues related to sports performance, athletes should consult sports psychologists only after getting a referral from their coaches.

*There is increasing awareness of mental health issues, which could influence the training offered by some younger coaches. So they suggest their athletes to consult sports psychologists regularly (Team official 1).*

##### ***Self-help strategies***

The interviewees from the three groups agreed that elite athletes, especially males, may find it difficult to seek help from others. Therefore, many athletes prefer to engage in self-help. Elite athletes might seek to 'put on a brave face' to

conceal their emotional vulnerability and mental health difficulties. Some of the interviewed athletes believed that they could fix their mental health issues by themselves, through measures such as reading books or listening to music. Some athletes believed in negative measures such as smoking and drinking alcohol. However, the coaches and team officials agreed that these negative strategies cannot solve athletes' mental health difficulties.

*They prefer smoking, drinking, and having fun with their friends, as a way of trying to cover it up. But I don't think the issues can be solved effectively that way. It just helps them to alleviate their negative emotions at the times they happen (Coach 5).*

#### **4.3.2 Theme 2: Experiences of mental health**

Regarding the experience of mental health, the participants in all three groups admitted that the majority of elite athletes suffer from various mental health issues, and these mental health issues might lead to poor performance.

##### ***Experiences of mental health issues***

The participants across three groups perceived depressed mood and anxiety about performance to be the most prevalent mental health concerns among elite athletes. Sleep-related concerns were emphasised by the athletes and coaches. Weight control issues were also highlighted by the athletes and team officials.

*Depressed mood.* Many elite athletes reported having experiences of low mood, tearful situation, and feelings of worthlessness during training. The coaches and team officials highlighted that these kinds of emotions are associated with

injuries, weight control issues and dissatisfaction over past performance.

*I feel like I'm having a breakdown. I can't even train on the training ground. When I start training, I can't stop myself from crying. I even cried in a dream. I feel depressed, and am suffering as a result of training. I can't stand it. And I feel worthlessness about my training, about this game (Athlete 14).*

*Competitive anxiety.* In particular, anxiety often rise in elite athletes before competitions, especially for significant major events. Such pre-competitive anxiety, as pointed out by coaches and team officials, can cause muscle tension, fatigue, loss of appetite and sleep problems, which may reduce athletes' performance.

*Some athletes might have pre-competitive anxiety. They can not perform well as usual due to muscle tension and sleep difficulties (Coach 9).*

*Sleep-related concerns.* The elite athletes and coaches recognised that insufficient sleep is likely to happen during the nights before competitions. Some athletes had been suffering from sleeping issues for a long time, and experienced high levels of fatigue. These issues were believed to affect the athletes' participation and performance in their sports.

*They felt anxiety before the competitions, especially for those significant upcoming competitions, such as the Whole National Game and championship which recognised as the most important competition each year. Muscle tension, loss of appetite and some other physical symptoms could be observed (Team official 4).*

*Weight control issues.* The elite athletes and team officials identified that athletes might develop eating and weight-control issues that could affect their physical functions. Such issues may have psychological consequences, especially for those engaged in weigh-in sports. However, eating and weight control difficulties were not emphasized by coaches.

*It is believed that weight control could influence the competition and mental health issues. It is hard to prepare for the competition after you lose your weight because you do not have enough energy to prepare. Negative emotions emerged. It could be an important issue for us (Athlete 3).*

### ***Impact on performance***

*Performance.* The participants felt that mental health issues might result in poor performance in training, which could hinder athletes' performance in competitions. The depressed mood, competitive anxiety, sleep-related concerns, and weight control issues negatively impacts on performance, especially in the big competition.

*All of us are worried about poor performance, especially in the big competition, such as the Whole National Games. Firstly, we were afraid of being disappointed by families and coaches. Secondly, the benefits, including money, fame, and, even your future, would push you to think about the competition, the results. The more pre-competition anxiety had, the poor performance you got. (Athlete 2).*

### **4.3.3 Theme 3: Mental health literacy**

Although concerns about mental health issues have increased within sporting community, the participants admitted that their knowledge of mental health issues, the approaches they used to acquire this knowledge and their knowledge of the available helps were not sufficient.

### ***Knowledge of mental health issues***

The participants across groups admitted that athletes do not have adequate knowledge of mental health issues, or of mental health risk factors. Some of them



perceived the need for education on mental health issues. Additionally, coaches and team officials emphasized the education level of elite athletes might have impacted their awareness of mental health. Thus, education with the relevant knowledge needed to be conducted to enhance mental health in elite sport.

*The athletes didn't have enough mental health knowledge. The awareness of mental health issues was highly relevant to the accumulation of knowledge, thus, they might not aware of the importance of mental health (Coach 1).*

### ***Approaches to acquire mental health knowledge***

The interviewees reported that athletes might have limited access to relevant knowledge. Some admitted that their possible sources of knowledge are coaches, sports psychologists, parents, friends, teammates, the Internet, and books, which enabled them to develop knowledge to aware of mental health issues. Team officials further suggested that enhancement interest in mental health might be an appropriate means to promote awareness of mental health. Thus, education for them might be an effective approach.

*The way to acquire knowledge in sports field was limited. How to enhance interest in sport psychology and get involve in leaning mental health was of importance (Team official 1).*

### ***Knowledge of available helps***

In general, the participants agreed that education concerning the relevant resources for help is limited. The possible sources of help are coaches, sports psychologists, the Internet, and books. They revealed that Internet and books could facilitate access to information and services, but had concerns about their

quality. Moreover, the emphasised relevant education should be offered to enhance elite athletes' knowledge of help available when suffering mental health issues.

*I would like to learn from sport psychologist and psychological consulting. The information which is obtained from the website cannot effectively address my mental health issues, as it lacks individualized prescriptions or scientific treatment strategies (Athlete 10)?*

*There is an ineffective approach to acquire knowledge regarding mental health. The athlete might learn from the Internet, or coaches. But I am not sure it is enough for them (Coach 6).*

#### **4.3.4 Theme 4: Help-seeking attitudes**

The majority of the interviewees agreed that negative attitudes exist towards elite athletes who seek help for mental health issues, and that both public stigmas and self-stigmas are involved. However, some of the participating athletes and coaches expressed positive attitudes towards elite athletes who seek help. These participants thought that everyone is at risk of experiencing mental health issues.

#### ***Stigmas***

Stigma refers to negative thoughts, feelings and behaviours towards individuals or groups that possess characteristics or engage in behaviours that are viewed as unacceptable and/or inadequate by wider society (Wahto et al., 2016; Watson, 2005). Stigmas can be public stigmas, self-stigmas. The interviewees in all three groups felt that members of the public are likely to view athletes who seek help for mental health issues as weak and inadequate. This response indicated that the participants perceived a high level of public stigma regarding

mental health help-seeking. Furthermore, the athletes themselves said that they would feel ashamed if they had a mental health problem or if the public knew that they had sought help for a mental health issue.

*Athletes who have mental health issues are thought to have less self-confidence. Athletes themselves are ashamed of having mental health issues, as the image they present to the public is supposed to be tough and strong (Athlete10).*

### ***Positive attitudes***

Some of the athletes and coaches suggested that there should be a positive attitude towards those who seek help for mental health issues. The athletes felt that they faced more severe pressure than non-athletes, and the coaches noted that every athlete experienced emotional adversity during training and competition.

*I think it is normal for athletes to experience mental health difficulties in training and competition. We suffer from the pressure of competition. We're just normal people (Athlete19).*

### **4.3.5 Theme 5: Help-seeking intentions**

The interviewees in all three groups believed that some elite athletes have the intention of seeking help when experiencing mental health issues. However, some of the coaches and team officials indicated that they preferred their athletes not to seek such help from others. In some cases, their reasons were related to stigmas; in other cases, they simply did not know where the athletes could go to seek help.

### ***Seeking help from others***

The athletes and coaches agreed that many athletes intend to seek help when

experiencing mental health issues. Furthermore, the team officials indicated that elite athletes tend to seek help through informal channels (such as talking to teammates or parents), rather than using formal channels (i.e., coaches). The participants also reported that athletes tend to avoid seeking help from sports psychologists, perhaps due to concerns over public or self-stigmas.

*I prefer to seek help from my teammates who could understand this feeling and share my feelings. They can help me to analyze and solve the problem through their experience or understanding (Athlete 12).*

### ***Self-help intention***

The interviewees indicated that some elite athletes usually prefer to seek help from ‘no-one’ when experiencing mental health issues. The coaches revealed that athletes, especially males, tend to choose self-help. A possible reason relates to the fear of stigmatisation reported by both coaches and team officials. Another reason mentioned by the team officials was that athletes are not sure where they should go to seek help.

*I prefer to cry, sing, or drink. I might not be able to solve my issues effectively, but I prefer to stay alone (Athlete 14).*

*Two possible reasons should be paid into attention. Firstly, they did not know where to find support if they suffering mental health-related issues. Secondly, they might prefer to choose self-help because of embarrassment (Team official 2).*

### **4.3.6 Theme 6: Socio-cultural factors influencing athletes’ mental health and help-seeking**

The participants identified several socio-cultural factors that can influence athletes’ mental health and their capacity to seek help when needed. In general,

they believed that supportive relationships and a positive environment from the sports system and athletes' cultural background facilitate help-seeking. In contrast, poor support from significant others, an unhealthy and untrustworthy sports system and a stress-related version of Chinese culture can negatively impact athletes' mental health and capacity for help-seeking.

### ***Social support***

Generally, the three groups of participants indicated that encouragement and support from trusted significant others, including parents, teammates, friends, coaches, officials, and sports psychologists, facilitate mental health help-seeking by athletes.

*The coach's attitude was understandable and they were willing to support you (Athlete 2).*

*Mutual help and encouraging words should be offered by teammates, which facilitate help-seeking. Team awareness and team importance are emphasised in our team (Coach 11).*

*Mental health and personal development were also important. I would like to give fully supportive sources to assist athletes if they encountering what kinds of adversities or mental health issues (Team official 4).*

### ***Chinese sports system***

The participants expressed some disagreement about whether the Chinese sports system can provide a positive and friendly environment for athletes who have mental health concerns. The interviewees from all three groups generally believed that the Chinese sports system provides a good environment for players. For example, this system offers excellent examples from other successful athletes,

good and trusting relationships between athletes and their coaches, supportive training environments, excellent teams and consistent training to build confidence and stress tolerance. However, some of the respondents also indicated concerns over unfriendly and competitive relationships among athletes, a poor coach-athlete relationship, negative and unhealthy environments in sports teams and performance-driven stress in the system. They felt that these issues result in mental health issues and hinder athletes from seeking help.

*Good relationships among players enabled them to develop mental health. They could support and encourage each other when suffering mental difficulties, and then they might find ways to solve these problems together. While, the bad results would be acquired if the relationships were unfriendly, accordingly (Coach 7).*

*Some high-level elite athletes with excellent performance played core roles in the team. Others would like to behave in line with the excel model. Additionally, others preferred to seek help from the model when they struggling with difficulties, such as injuries or deficits in mental health-related areas. It benefits for both athletes and whole teams in terms of personal development and performance. Otherwise, the situation might be worse due to the unfriendly relationship or bad model behaviours (Team official 4).*

*The coach could encourage you if you told him the mental health issues. But it requires good relationships between coaches and athletes. Then, the athletes could talk about the issues openly (Athlete2).*

*Some athletes who went to the national team did not get along well with the coach, and the quality of their training was weakened. During the training, they might have felt as if they were less valued, and then they probably lost interest in participating (Coach 12).*

*The positive sports environment means that principles and rules are followed, and rewards and punishments are fairly received. This is conducive to fostering the ability to deal with pressure and cultivate a supportive training environment (Coach 7).*

*National teams emphasized the importance of mental health in recent years. However, the significance was not admitted by provincial teams. Thus, some of them concealed their personal feelings by only focusing on performance rather than mental health. It was hard for them to talk about mental issues freely and seek help directly (Team official 5).*

### ***Chinese cultural background***

Most of the participants, including some of the athletes and coaches and all of the team officials, suggested that the traditional Chinese culture emphasises morality and social responsibility, along with harmony between individuals and their society. These participants felt that this cultural background can improve athletes' mental health and help-seeking. However, some of the athletes and coaches worried that the culture's emphasis on responsibility and 'face' can lead athletes to experience a high level of stress related to performance.

*During the past decades, mental health was not paid much attention to individuals in our country, not only for coaches and athletes but also for the public. Furthermore, most athletes were unwilling to discuss the issues they experienced, especially related to mental health issues (Coach 2).*

*Morality, harmony and social responsibility are emphasised by Chinese traditional culture. This philosophy of life, including standards for how to cope with others, how to deal with difficulties, and how to offer information and services to help others, can promote athletes' mental health and encourage them to seek assistance (Team official 4).*

## **4.4 Discussion**

The current study aimed to gain a bottom-up understanding of the athletes' existing help-seeking behaviors and explore the factors that may influence athletes' help-seeking behaviors. Six main themes emerged from the data analysis, namely help-seeking behaviours; mental health experiences; MHL; help-seeking attitudes; help-seeking intentions; and socio-cultural factors influencing athletes' mental health and help-seeking. This study provides valuable information about how to promote athletes to seek help when they experiencing mental health issues.

Findings of the current study can be used to develop mental health promotion programmes tailored for the needs of Chinese elite athletes.

Help-seeking behaviours involved either seeking help from others or self-help. Athletes preferred to seek assistance from informal sources (i.e., teammates or friends) rather than formal sources (i.e., coaches or sports psychologists), consistent with the findings of other studies on help-seeking behaviours (Rickwood et al., 2005). Stigmas were found to be one of the main barriers to seeking help. Therefore, self-help behaviours should be promoted, especially for males (Wood et al., 2017). Athletes used both positive and negative self-help strategies. Yet, the negative strategies might be ineffective in dealing with mental health issues. Previous studies have demonstrated that negative strategies may simply cover up issues rather than fix them (Butler-Coyne et al., 2018). Therefore, future studies should further investigate how to build positive strategies and avoid negative strategies in coping with mental health issues.

Regarding experience of mental health and the impact on performance, the participants offered insights into athletes' experiences of mental health issues, which closely associated with performance. The participants reported many of the same experiences of mental health issues that have been indicated by previous studies (Reardon et al., 2019; Rice et al., 2016). It should be emphasised that the sleep-related concerns and weight control issues were each noted by only two of the three groups' interviewees. Previous findings have shown that sleep issues can weaken athletic performance in many sports (Calogiuri & Weydahl, 2014;



Dunican et al., 2017), especially if sleep is lost on the nights before competitions (Roberts et al., 2019). Weight control issues was also found to be an important factor that can affect mental health, especially for athletes in weigh-in sports. Although the issues of eating disorders and disordered eating caused by weight control were not mentioned, weight control problems may be the strongest predictors of eating disorders in athletes (Anderson & Pierce, 2012; Rousselet et al., 2017). Research indicated that elite athletes struggled with different mental health issues, which further impacted performance (Schinke et al., 2017). Therefore, the participants indicated that experience of mental health issues, and existing risk factors should be more highly valued in the future studies.

Although MHL was the first step for athletes to seek assistance (Davies, 2015; Rickwood et al., 2005), the current study revealed that athletes had low levels of MHL, which might contribute to unwillingness to seek help. This is consistent with previous findings (Ferguson et al., 2018; Guo, 2008; Han et al., 2019). Research revealed that athletes might not know how to recognise mental health issues, mental health risk factors, how to seek mental health information or how to find what help is available (Gulliver et al., 2012a). Therefore, the importance of knowledge mental health issues, and awareness of their potential consequences, should be noticed by the sport psychologists and coaches as previous research suggested (Gorczynski et al., 2019; Rathod et al., 2019).

Help-seeking attitudes are related to both public and self-stigmas. Athletes who seek help for mental health concerns may be viewed as weak by others

(Bauman, 2016; Gulliver et al., 2010). Additionally, self-reported difficulties by athletes might be caused by self-stigmas, which caused them shame, embarrassment, or discomfort about seeking help for their issues. Stigmas were emphasised as the serious issues tend to hinder help-seeking by athletes. Despite these issues, both athletes and coaches seemed to practice the promotion of positive attitudes towards dealing with mental health issues, which might be due to increasing awareness on the part of the IOC (Reardon et al., 2019). This, of course, enabled growing acceptance for athletes who seek help with mental health issues such as depressive symptoms or anxiety. Negative attitude towards help-seeking was recognize as one barrier towards help-seeking behaviours as discussed above (Gulliver et al., 2012a). Although some positive attitudes towards help-seeking were indicated by athletes and coaches in the current study, the effects of public and self-stigmas should be further investigated in future studies.

Similarly, help-seeking intentions also involved seeking help from others intentions or self-help intention. Coaches and team officials reported that the intentions of help-seeking was hard to obvious. Similar to previous findings, teammates and coaches were approachable ways to seek assistance across groups (Coyle et al., 2017; Ferguson et al., 2018). Furthermore, athletes intended to choose self-help, which also might due to the high level of stigmas, especially for males (Mazzer & Rickwood, 2015; Swann et al., 2018). Therefore, as one of the most important step to help-seeking behaviours (Ajzen, 1991), future studies should further promote athletes to enhance positive self-help intentions and avoid

negative intentions in dealing with mental health issues.

Socio-cultural factors influence athletes' mental health help-seeking propensity. Strong existing support from teammates, parents, coaches, sports psychologists, and team officials would enable them to seek assistance when struggling with mental health. Particularly, social support plays a significant role in helping athletes to cope, reducing the negative effects of stressors and improving mental health (Saha et al., 2014; Wright et al., 2013). A comprehensive framework for providing both formal and informal support could facilitate help-seeking among athletes who encounter mental health issues (Gulliver et al., 2012b). Regarding the Chinese sports environment, some of the culture's vital components, such as its emphasis on building positive relationships with others (e.g. teammates and coaches) and promoting a positive and harmonious training environment, should be further investigated in future studies (Si & Jiang, 2011). Considering elite sports environments, how to build the links between MHL and mental health should be also noted, which might further contribute to relevant intervention conducted in elite athletes (Gorczyński et al., 2019).

Culture might be one important factor that cultivates ones' resilience to deal with their difficulties (Rathod et al., 2019). Therefore, the importance of both fostering harmony among individuals and within society and promoting morality and social responsibility was highlighted in the participants' discussions (Duan, 2018). However, traditional beliefs and values of Chinese culture may lead to high levels of stigmatisation for those experiencing mental health difficulties (Wong et

al., 2004). Clearly, stigmatisation related to mental health should be reduced to effectively improve mental health in China's athlete training system (Larkin et al., 2017). Furthermore, a lack of sources to seek help should be highlighted. Previous studies revealed that in the low and middle-income countries, some difficulties such as lack of approaches to acquire sources, inadequate training and knowledge were commonly seen (Rathod et al., 2019). Therefore, future studies aiming at preventing and/or treating mental health issues should be focused both individually and systemically (Gorczynski et al., 2020b). Some collaboration, including sport psychology, sports psychiatry, and clinical psychology, should be encouraged to propose strategies for elite athletes' mental health (Gorczynski et al., 2020b). It should also be highlighted that the relevant intervention material needed to be translated and adapted due to the culture adaption (Rathod et al., 2019).

#### **4.4.1 Strengths and limitations**

This study has several strengths which should be emphasised. First, the data were collected from athletes, coaches, and team officials, and were analysed by two independent coders. The results from different perspectives could enhance trustworthiness. Furthermore, previous studies demonstrated that coaches' engagement in helping behaviors such as promotion, prevention, and early intervention may help to support young athletes' mental health (Duffy et al., 2019), that's why the knowledge and experience are important for the athletes. Team

officials were involved in this study, as these officials play significant roles in promoting policies and strategies in Chinese systems of training in sports and culture. Therefore, the viewpoints of team officials provided a unique and important perspective on mental health and help-seeking in elite sports. Second, to the best of our knowledge, this is the first study to focus on the mental health issues and help-seeking tendencies of Chinese elite athletes while considering Chinese culture and the unique Whole Nation sport system.

This study also has limitations. First, the findings could have been affected by male gender bias, due to the male-dominated sport culture; all of the participating team officials were males, and eight of the coaches were males. Although this sample was broadly representative of the gender pattern among team officials and coaches in the sports concerned, it would also be beneficial to solicit the opinions of more female coaches and team officials, as gender differences may affect the findings. Second, the participants came from two Chinese provinces only, and did not reflect the geographic diversity of the sports population, thereby potentially limiting the study's external validity. Third, this study only focused on elite athletes in individual sport. However, some team sport athletes may also have difficulties in help-seeking (Rice et al., 2016). Future studies should consider implementing in-depth interview related to elite athletes' help-seeking in team sport. Last, the experiences of mental health issues were not diagnosed by the existing instruments, such as the DSM-5 from American Psychiatric Association (APA, 2013), or the ICD-11 from WHO (2018). Therefore,

it's hard to identify the mental health condition as suggested by the International Society of Sport Psychology, such as clinical mental health disorders, subclinical mental ill health, the human condition, and the athlete condition (Gorczyński et al., 2020b; Henriksen et al., 2019; Moesch et al., 2018).

## **4.5 Conclusion**

The current study revealed that Chinese elite athletes suffered from various mental health issues, which further impacted their performance. In addition, athletes' MHL levels, negative help-seeking attitudes and intentions, and socio-cultural factors could impact their help-seeking behaviours. Findings of the current study can be used to guide future intervention studies related to the promotion of mental health and help-seeking among Chinese elite athletes by considering Chinese culture and Chinese sports system.

## **CHAPTER 5. The Effect of the Mental Health Literacy Intervention Programme on Improving Help-Seeking among Chinese Elite Athletes: A Randomised Controlled Trial**

Given the urgent need to promote MHL among Chinese elite athletes, an MHL intervention targeting Chinese elite athletes was designed and conducted. In line with previous studies, an 8-week educational intervention programme was implemented in this study. Using an RCT design, the effects of the MHL intervention on MHL, help-seeking attitudes, intentions and behaviours and stigma among Chinese elite athletes were examined. This study has practical implications for interventions designed to promote MHL among Chinese elite athletes and provides knowledge for future research on MHL and help-seeking.

### **5.1 Study Purpose**

This study examined the effect of the proposed MHL intervention on enhancing MHL and help-seeking attitudes and intentions, reducing the stigma associated with mental health issues and improving help-seeking behaviour among Chinese elite athletes. Hypothesis 1 postulates that after completing this MHL intervention programme, the participants in the MHL group will show improvements in MHL, mental health help-seeking attitudes and intentions in the post-intervention and 1-month follow-up assessments, compared with those in the waiting list control group (WCG). In addition, Hypothesis 2 posits that after

completing MHL training in the intervention programme, the participants in the MHL group will have less stigma associated with mental health issues (public-stigma, self-stigma, and total stigma) and better help-seeking behaviours (sought formal help and sought informal help) in the post-intervention and 1-month follow-up assessments compared with those in the WCG .

## **5.2 Development and Evaluation of the Intervention Programme**

### **5.2.1 Contributions of Study 1 and Study 2 to the Development of the Intervention Programme**

Study 1 was a systematic review of all MHL interventions designed to improve MHL and mental health help-seeking in athletes, summarising the results and relevant information that could be used as a reference to develop the content of this intervention. For example, the Support for Sport programme (Van Raalte et al., 2015) offers knowledge about depression and anxiety, which was introduced during the second week of the proposed programme. In addition, the SOMI programme (Breslin et al., 2018a) provides relevant intervention content, such as keep learning and giving, introduced during the fifth week of the proposed programme.

Study 2 was a qualitative study with semi-structured interviews conducted with athletes, coaches and team officials to identify potential factors that can influence athletes' mental health help-seeking, such as their MHL and their attitudes towards help-seeking. The results provided by the different views and



field experiences of the athletes, coaches and team officials interviewed offered new information for the development of the intervention programme for Study 3. For instance, since culture might be one important factor that cultivates ones' resilience to deal with their difficulties (Rathod et al., 2019), the results of the importance of Chinese culture and Chinese sport system reported by the participants would be added to the content of MHL intervention program.

### **5.2.2 Theoretical Underpinnings and Other Considerations**

The MHL intervention programme in Study 3 was based on help-seeking theory developed by Rickwood et al. (2005). This theory suggests that mental health help-seeking is based on a four-step process, the first of which is to recognise a mental health problem. In Study 2, the participants reported that they had difficulty judging the seriousness of the symptoms of mental health issues. This information was included in the development of this intervention programme. The prevalence of mental health symptoms and disorders and risk factors were introduced in the second, third and fourth weeks, respectively. The second step is to focus on people's ability to express their need for help. The participants' attitudes towards help-seeking were summarised based on the results of Study 2. In the programme, all attitudes promoting appropriate help-seeking behaviour and guidelines on how elite athletes can discuss their mental health with professionals were included. The third step is to know the sources of help available and how to access them. Information on approaches and processes for seeking professional

help was provided. Attitudes towards sources of professional help and self-help strategies were summarised from the results of Study 2. In the proposed programme, available formal and informal approaches and self-help strategies were discussed. After completing the above three steps, the participants were expected to develop positive attitudes and beliefs about help-seeking (Davies, 2015).

### **5.2.3 Designing the Intervention Materials and Evaluation**

The results of Studies 1 and 2, the literature review, the theoretical underpinnings and the design considerations were used to design this MHL intervention for elite athletes. The intervention programme was designed in accordance with the help-seeking process (Rickwood et al., 2005) and the definition of MHL (Jorm, 2012). The core elements of the programme were developed based on previous studies with athletes. Given the lack of research in sport, it is important to draw on the literature from comparable domains, such as education (Muir & Munroe-Chandler, 2020). Therefore, the content was also based on previous studies in the school context (Davies, 2015; Kutcher et al., 2015).

The intervention programme lasted eight weeks for three reasons. First, following the literature, three perspectives based on systematic reviews and meta-analyses were analysed: mental health help-seeking (Xu et al., 2018), mental health first aid training interventions (first aid skills to support people with mental

health issues, Morgan et al., 2018) and MHL interventions conducted in the school context (Wei et al., 2013). The results showed that an intervention period ranging from 2 to 14 hours can demonstrate the effectiveness of a programme to enhance mental health help-seeking. Second, based on the literature review in the sport context discussed above, an intervention period ranging from at least 10 minutes to 12 hours can lead to improvements in mental health help-seeking. Third, from a practical perspective, an intervention period of 7 to 10 weeks is suitable for winter/summer training in preparation for in-season games. Thus, an 8-week intervention programme with a 120-minute session per week was implemented for this study.

For this intervention, text, videos and images were used to deliver content suitable for elite athletes. All text-based content was also proofread by one student with a Master's degree in sport psychology and five years of experience working with elite athletes. In addition, group interaction, group activities, individual homework exercises and reading materials were included. Group interaction and group activities were conducted during the educational classes, such as discussing past mental health experience, discussing the influence of mental health issues on performance and personal life and discussing available sources of help and how to access them. Individual homework exercises, such as 'what I learnt', were recorded after each class in a diary. These exercises tested whether the participants could remember the factual information provided during the programme. Moreover, the participants were asked to read some materials to deepen their

understanding of the weekly content.

The pilot version of this MHL intervention consisted of the following contents: (1) general introduction of MHL and mental health; (2) recognising mental health symptoms and disorders and the causes of mental health symptoms and disorders; (3) knowledge of mental health risk factors in sport; (4) attitudes promoting the recognition of appropriate help-seeking behaviour and knowledge of the professional help available; (5) professional help available and knowledge of self-help strategies; (6) information on help-seeking; (7) importance of Chinese culture and the sport context; and (8) comprehensive review and consolidation.

In this programme, MHL was introduced in the second, third and fourth weeks. Help-seeking was introduced in the fifth and sixth weeks. Thus, MHL was evaluated based on the content of weeks 2 and 3. The stigma associated with mental health and help-seeking attitudes were assessed based on the content of week 4. Help-seeking attitudes were measured based on the content of weeks 5 and 6. In addition, according to its definition, mental health help-seeking is a process on a spectrum of activity, involving attitudes, intentions and actual behaviours (Rickwood et al., 2005; Rickwood & Bradford, 2012). Therefore, help-seeking intentions and behaviours were also assessed.

Moreover, the pilot version of the intervention programme was evaluated by two international experts. The main purpose of this expert evaluation was to enhance the rationality, suitability and operability of this programme based on their experience in related areas. The two international experts had over 20 years

of experience working in a related area of mental health among elite athletes and were university professors. Two rounds of consultations were conducted. First, the two experts were invited to evaluate the programme in terms of effectiveness, suitability and feasibility. Effectiveness was related to the content and exercises proposed in the programme to achieve the objectives of the study. Suitability referred to whether the content and exercises proposed in the programme were suitable for elite athletes to learn, and feasibility referred to whether the content and exercises of the programme were suitable for elite athletes to apply in training and competition. The evaluation was rated on a 5-point Likert scale, ranging from very poor (1) to very good (5). The experts were asked to provide suggestions for any item with a score below 4. Items were modified based on their feedback. After the revisions, the second round was conducted, during which the two experts were asked to assess (final evaluation) the content and exercises of the intervention programme and to give their final comments (pass  $\geq 4$  and fail  $< 4$ ) (Zhao, 2016). The evaluation results were shown in Appendix 3.

#### **5.2.4 Pilot Test**

The aim of the pilot test was to test the intervention programme. Information and feedback from this stage generally enable the conductor to ensure that the participants in the target population can understand the content of the intervention as intended and to identify what needs to be clarified or modified.

A convenience sample of six elite athletes (three men and three women) from

the Track and Field Training Centre participated in this study. The participants came from two sport events (long jump and triple jump) and had an average age of 20.83 ( $SD = 3.12$ , range = 18-26) years. They had 6 years of training experience ( $SD = 3.03$ , range = 3-10). All participants were asked not to share information about the educational classes with other elite athletes. Their coaches agreed to their participation in the intervention.

The intervention lasted four weeks with two classes per week for a total of eight classes. This duration was chosen for practical reasons (training schedule). Each class lasted 120 minutes. Specifically, each class involved a 60-minute educational class, a 30-minute group interaction and 30 minutes for an individual homework exercise and feedback. The intervention was conducted in a counselling room in the Track and Field Training Centre.

Based on the objectives of the preparation stage, the suitability and feasibility of the intervention and the accuracy and usability of the materials were examined (Van Raalte et al., 2015). After each educational class, the participants were asked whether they understood the content. Any additional comments on their experience during the educational classes were welcomed and recorded by the implementer.

All observations and feedback from the participants led to recommendations for improving the educational content. One participant suggested that two examples be given to be easily understood by the participants. These referred to the concepts of 'ergogenic' in the fourth week and 'social support' in the sixth

week. Changes were made in accordance with the participants' feedback before conducting the main study.

## **5.3 Method**

### **5.3.1 Study Design**

Study 3 was an intervention study with a 2-arm (MHL group, WCG) RCT design. The RCT design followed the CONSORT procedure (Schulz et al., 2010). The  $2 \times 3$  design included the groups (MHL group, WCG) as the between-subjects factor and the time (T1: pre-intervention; T2: post-intervention; T3: 1-month follow-up) as the within-subjects factor. After checking the inclusion and exclusion criteria (T0), the athletes were randomly (1:1 ratio) assigned to one of two groups: (1) the MHL group: participated in the 8-week intervention based on the MHL programme (see Figure 3 for more details); or (2) the WCG: did not participate in any MHL-related educational programme during the study period. Participants were not be told which group they were assigned to. Blinding of the intervention conductor was not applicable.

### **5.3.2 Participants and Recruitment**

Sample size calculation. For this study, the sample size was calculated using G\*Power. Based on previous research, a small to medium effect size of 0.25 was adopted (Gulliver et al., 2012b). With a power of 0.8 and alpha of 0.05 and assuming a correlation between the pre-test, post-test and follow-up intervention

test of 0.5, the sample size for the two groups was 44 to detect the expected effect size. Considering a 25% dropout rate (Ingunn et al., 2013), the sample size for this study was 60.

The inclusion criteria for the participants were as follows: (1) a low to medium level of MHL (score < 105) measured by the Mental Health Literacy Scale (MHLS; Han et al., 2019); (2) aged 16 to 25 (Indeed, the prevalence of mental disorders in people of this age group is higher than that of any other age group, Van Raalte et al., 2015) (3) from individual sport (Chinese elite athletes from individual sport generally have more mental health issues and lower mental well-being, Yang, 2015); (4) active athletes able to attend daily training and competition; and (5) elite athletes who have competed at the provincial, national or international level.

The exclusion criteria were as follows: (1) unable to attend the entire intervention due to training or competition outside the centre; (2) severe injury certified by a sport doctor (Xu et al., 2019); and (3) received mental health professional counselling in the past three months (Donohue et al., 2018)..

One hundred and twenty-two elite athletes were screened for eligibility, of whom 60 met the eligibility criteria. Elite athletes from different individual sport training programmes at the Hubei Badminton and Table Tennis Sports Training Centres were recruited by the researcher. The training centres approved the implementation of this study. Ethics approval for the study was granted by the Research Ethics Committee at Hong Kong Baptist University.



Based on the results of the inclusion and exclusion criteria, the 60 qualified participants were randomly divided with equal probability (1:1 ratio). The athletes were divided into the MHL group and the WCG using stratified randomisation for gender and sport. This randomisation was conducted by a researcher with a Master's degree in sport psychology but not involved in this programme. For each participant, the envelope method (number 1 or 2) was used. The participants with numbers 1 and 2 were allocated to the MHL group and the WCG, respectively. The allocation sequence was hidden from the researcher.

Finally, 60 elite athletes were randomly assigned to one of two groups: the MHL group ( $N = 30$ ) and the WCG ( $N = 30$ ). Recruitment, screening and grouping of the participants started in November 2019 and ended in end of November 2019. The intervention classes lasted eight weeks, with a 1-month follow-up. For the MHL group, seven participants dropped out for the seventh class. The main reason was the unpredictable situation of COVID-19 in Wuhan, which prevented face-to-face classes (six participants). In addition, one participant was injured. The other participants in the MHL group attended all of the intervention classes. For the WCG, three participants dropped out in the third, fifth and sixth weeks due to severe injury, transfer to another provincial team and retirement, respectively. The dropout rate of the participants was 16.7% (10/60) from pre-intervention to post-intervention. There were no other dropouts in the follow-up test.

The ages of the 60 participants ranged from 16 to 22 ( $M = 17.50$ ,  $SD = 1.70$ ),

with 35 men and 25 women. The participants practised badminton and table tennis, with training experience ranging from 5 to 15 years ( $M=10.43$ ,  $SD = 2.13$ ). They were provincial ( $N = 16$ ), national ( $N = 41$ ) and international athletes ( $N = 3$ ). Finally, they were undergraduates ( $N = 22$ ) and senior high school graduates ( $N = 38$ ).

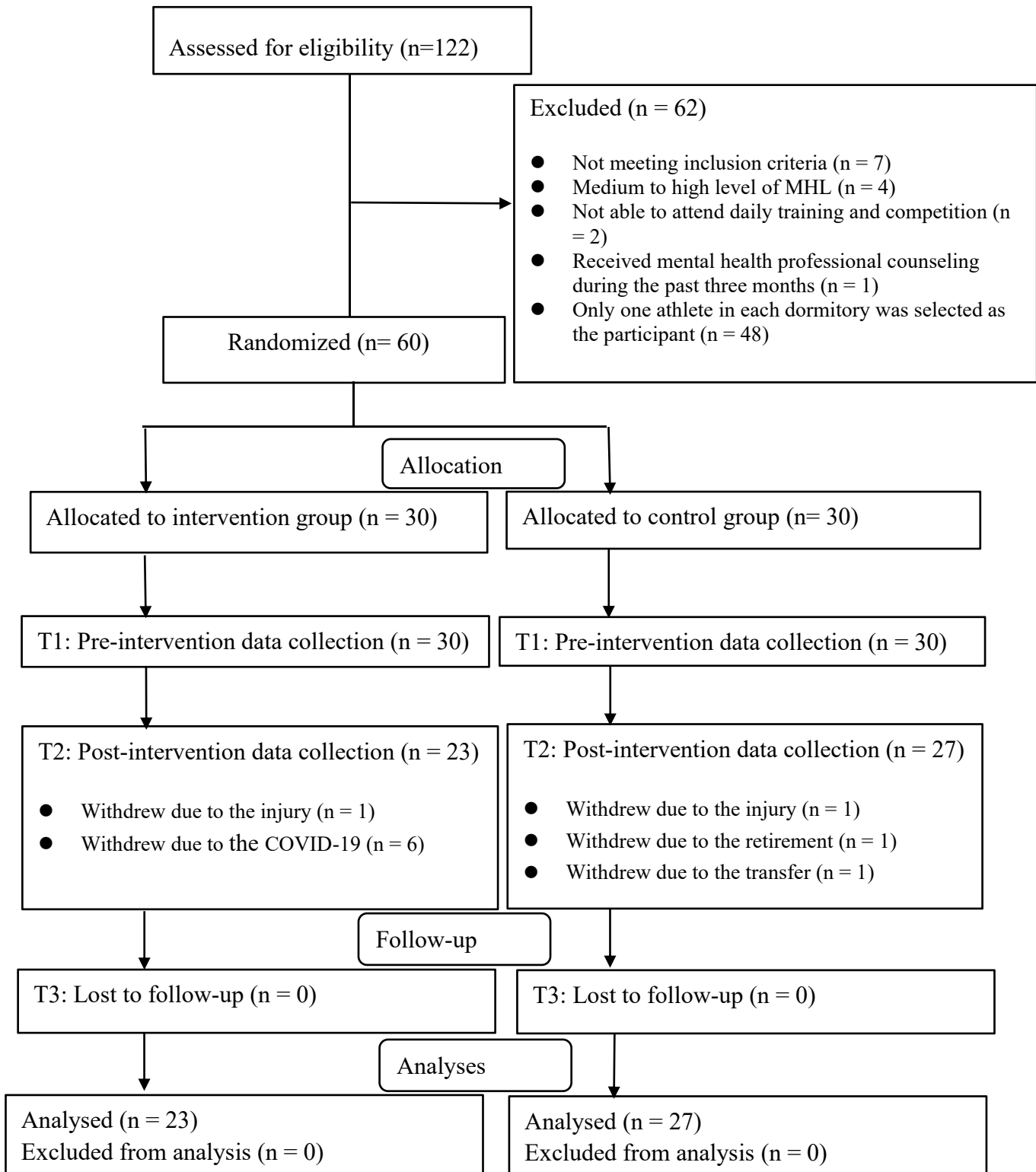


Figure 3 Study flow CONSORT diagram.

### 5.3.3 Procedure

MHL Group. All participating athletes were required to attend a weekly educational session for eight weeks. The final version of the MHL intervention programme is presented in Appendix 5. Specifically, it includes (1) General introduction of mental health literacy and mental health, (2) Recognizing mental health symptoms and disorders and causes of mental health symptoms and disorders, (3) Knowledge of mental health symptoms and disorders in sport, (4) Knowledge of mental health symptoms and disorders and risk factors in sport, (5) Attitudes towards mental health and help-seeking, (6) Seek for help-seeking and support, (7) Importance of Chinese culture and sports context, and (8) Comprehensive review and consolidation. The 30 participants in the MHL group were divided into five small groups,  $n = 4, 6, 6, 7, 7$ , to ensure that all participants took part in the discussion in each class, which could facilitate their participation in the entire intervention programme. Each group received the same intervention programme with the same conductor. The schedule was decided by the researcher, coaches and team officials to suit their training programmes. Each session included a 60-minute educational class, a 30-minute group interaction and 30 minutes for an individual homework exercise and reading material. The 90-minute educational classes were implemented in an office at the Badminton and Table Tennis Sport Training Centres. The intervention was conducted before the National Championship during the preparation of in-season competitions.

A sport psychologist with a National Psychologist Certificate and over five years of experience working with elite athletes conducted the intervention. The progress of the intervention was supervised by another sport psychologist with over 20 years of experience in a related area of mental health among elite athletes.

The informed consent statements were signed for the participants over the age of 18. And for the participants under the age of 18, the informed consent permissions were received from their parents.

**The WCG.** The control group did not participate in any related educational programme during the study period. All participants in the control group were expected to receive the MHL programme after the completion of this study. However, with the COVID-19 pandemic situation, the exact period and format of the intervention (online or face to face) have not been decided yet. A preliminary agreement has been reached that the intervention will be conducted during winter training in 2020. Similarly, the informed consent statements were also signed for the participants over the age of 18 and the informed consent permissions were provided from their parents for the participants under the age of 18.

**Quality Control.** The quality control included participation evaluation, contamination prevention and check, as well as manipulation check.

Participation evaluation. All participating athletes were invited to rate their satisfaction with the content of the intervention. This evaluation included the following questions: (1) how satisfied are you with the overall class content? (2) How useful do you think the class content is? (3) Did you enjoy the MHL

programme? (4) How much have you learnt from the MHL programme? (5) How important is the MHL programme to you? (6) Do you find the overall class content easy? (7) Do you have any suggestions on how this programme can be improved? (Hurley et al., 2018). A 5-point Likert scale, ranging from 1 (not at all) to 5 (very much), was used to assess this programme.

Contamination prevention and check. During the intervention period, the participants in the MHL group were asked not to share information with other athletes in the WCG. In addition, only one athlete in each dormitory was selected as a participant to minimise potential contamination. To check for possible contamination due to randomisation, during the 1-month follow-up, the participants in the WCG were asked whether they had received information on the intervention programme, and if so, the data of the participants concerned were re-examined for possible deletion (Tuijnman et al., 2019).

Manipulation check. Specifically, the ‘what I learnt’ homework exercises were used as a manipulation check. After each weekly class, the participants were asked to complete their homework in a daily training diary. Then, the conductor scored each athlete. If incorrect information or knowledge was provided by an athlete, it was pointed out for revision. The scores ranged from 0 to 100. A score above 80 indicated that the content was understood by the participants.

#### **5.3.4 Measures**

For the MHL group, all pre-intervention data were collected before their

training with the permission of the head coach, and all post-intervention and follow-up data were collected after the MHL programme classes. The data collection schedule for the WCG was the same as for the MHL group, with the permission of the head coach. Each questionnaire took approximately 20 to 25 minutes to complete using the *Questionnaire Star* website via their smartphones. Compared with a paper-and-pencil survey, online data collection has several advantages, such as reducing missing values (e.g. by reminding the participants that they did not answer a particular question) and not having to enter data later, thereby reducing possible sources of error (Dey et al., 2019). The demographic information of the participants (e.g. age, gender, type of sport, competitive level and years of experience) was collected.

**Primary outcomes.** The primary outcomes included MHL, help-seeking attitudes and help-seeking intentions.

MHL was measured with the Chinese version of the MHLS (Han et al., 2019). The Chinese version of the MHLS with 33 items has been tested in the elite population (aged 12 to 31). It has a minimum score of 33 and a maximum score of 150, with a higher score indicating a higher level of MHL. Questions with a 4-point scale are rated 1 (very unlikely/ unhelpful) to 4 (very likely/ helpful) and for 5-point scale 1 (strongly disagree/ definitely unwilling) to 5 (strongly agree/ definitely willing) (e.g., ‘To what extent do you think it is likely that in general, men are more likely to experience an anxiety disorder compared to women?’). The internal consistency of this scale is .704 and the test-retest

reliability is .763, with good construct validity. In this study, internal consistency was  $\alpha = .667$ .

Attitudes towards seeking professional help were evaluated with the Attitudes toward Seeking Professional Psychological Help-Seeking-Short Form (ATSPPH-S, Fischer & Turner, 1970; Hao & Liang, 2007). This scale measures attitudes towards seeking help with 10 items and 2 dimensions: openness to seeking treatment for emotional problems and value and need in seeking treatment. The participants were invited to rate each question (e.g. 'I would feel uncomfortable seeking help from professionals') on a Likert-type scale ranging from 1 (totally disagree) to 4 (totally agree), where a higher score indicates more positive attitudes towards seeking professional help. The Chinese version has been tested with university students (aged 17 to 27) and elite athletes (aged 12 to 31), with good structural validity. The internal consistency reliability of this scale ranges from .73 to .78 (Wei, 2012; Han et al., 2019). In this study, internal consistency was  $\alpha = .702$ .

Help-seeking intentions were assessed with the Intentions to Seek Counseling Inventory (ISCI, Cash et al., 1975; Hao & Liang, 2011), which contains 16 items and 3 dimensions: mental health and interpersonal relationship issues, performance issues and substance abuse issues. A 6-point Likert scale was used to evaluate help-seeking intentions (e.g., 'I will seek professional help if I experienced drug abuse'). The Chinese version has been tested with university students and elite athletes, with internal consistency reliability ranging from .71



to .92 and test-retest reliability from .74 to .85 (Han et al., 2019; Hao & Liang, 2011). In this study, internal consistency was  $\alpha = .907$ .

**Secondary outcomes.** The secondary outcomes included the stigma associated with mental health issues and help-seeking behaviour.

The stigma associated with mental health issues was assessed with the Perceived Devaluation-Discrimination Scale (PDDS, Link, 1987; Gao & Li, 2013). The Chinese version of this scale measures two types of stigma, public stigma and self-stigma, with 15 items. The participants were asked to rate each question on a 5-point Likert-type scale (e.g., ‘I would accept a person who has been in a mental hospital as a close friend’), where a higher score indicates more stigma associated with mental health issues. The Chinese version has been tested in the general population and elite athletes. The internal consistency reliability of the scale ranges from .71 to .81 (Gao & Li, 2013; Han et al., 2019). In this study, Cronbach’s  $\alpha$  was 0.739, indicating acceptable internal consistency.

Help-seeking behaviour was assessed with the Actual Help-Seeking Questionnaire (AHSQ; Rickwood et al., 2005). This questionnaire evaluates the participants’ help-seeking from formal and informal sources in the past two weeks. As this questionnaire does not have a Chinese version, the questionnaire translation procedures followed the recommendations of Hambleton et al. (2004). The questionnaire was first translated from English to Chinese by two experts with a committee approach. The two experts translated the scale separately, and all discrepancies were discussed to reach a consensus. The translation was validated

by two bilingual sport psychologists using the standard back-translation technique (Marín & Marín, 1991). Subsequently, a pilot test was conducted with elite athletes to verify the readability and clarity of the items. Wording and grammar were slightly modified based on the suggestions of these elite athletes. The final version of the scale consists of eight items to assess the help-seeking behaviour of people suffering from personal or emotional problems. It has two subscales: formal help-seeking and informal help-seeking sources. Different help-seeking behaviours were marked 1 or 0 as binary data based on whether or not a given behaviour existed.

### **5.3.5 Data Analysis**

SPSS 25.0 (IBM, New York) was used for data analysis, and all variables were presented as  $M \pm SD$ . The independent variables (IVs) were group (between-subjects independent variable: MHL group and WCG) and time (within-subjects independent variable levels: pre-test, post-test, follow-up test). The dependent variables (DVs) included primary (MHL, help-seeking attitudes and intentions) and secondary outcomes (stigma and help-seeking behaviour). Per-protocol analysis was conducted using the available data. Statistical significance was set at .05 (two-tailed).

To calculate whether there were significant differences at the baseline, descriptive statistics were used to test the distribution of the sociodemographic characteristics between the MHL group and the WCG, and all differences were

examined with *t*-tests or a chi-square test. In addition, to test the study hypotheses, the sphericity assumption was tested at the beginning (Girden, 1992). Then, a series of two-way repeated measures analyses of variance (ANOVA, Girden, 1992) was conducted to examine the group-by-time interaction effect on MHL, help-seeking attitudes and intentions and stigma, respectively. Logistic regression (for odds ratio, OR) was used to analyse the binary data (help-seeking behaviours).

## **5.4 Results**

### **5.4.1 Randomisation Test and Sample Characteristics**

Sixty elite athletes participated in data collection in the pre-intervention (MHL group = 30, WCG = 30) and 50 in the post-intervention (MHL group = 23, WCG = 27), and follow-up intervention (MHL group = 23, WCG = 27). During the preliminary data screening, no missing data were observed for the three assessments.

The baseline demographic characteristics and the pre-intervention comparison between the conditions are presented in Table 15. For age, gender, education level, sport and training experience, there was no difference between the groups. In addition, there was no significant difference between the MHL group and the WCG for MHL ( $t = .79$ ,  $df = 58$ ,  $p > .05$ ), help-seeking attitudes ( $t = 1.36$ ,  $df = 58$ ,  $p > .05$ ), help-seeking intentions ( $t = .52$ ,  $df = 58$ ,  $p > .05$ ), stigma ( $t = .03$ ,  $df = 59$ ,  $p > .05$ ), public stigma ( $t = 1.28$ ,  $df = 59$ ,  $p > .05$ ), self-stigma ( $t =$

-1.92,  $df = 59$ ,  $p > .05$ ), formal behaviors of help-seeking ( $\chi^2 = .11$ ,  $df = 1$ ,  $p > .05$ ),

and informal behaviors of help-seeking ( $\chi^2 = .70$ ,  $df = 1$ ,  $p > .05$ ).

Table 15.

*Baseline demographic characteristics for each group and comparisons between conditions*

Characteristic	MHL Group ( $N = 30$ )	Waiting List Control Group ( $N = 30$ )	Total ( $N = 60$ )	Test of significance
Age (years), mean (SD)	17.70 (1.80)	17.30 (1.60)	17.50 (1.70)	$t = .91$ , $p = .367$
Training experience (years), mean (SD)	10.67 (2.50)	10.20 (1.69)	10.43 (2.13)	$t = .85$ , $p = .400$
Gender, n (%)				
Male	18 (60%)	17 (57%)	35 (58%)	$\chi^2_1 = .69$ , $p = .793$
Female	12 (40%)	13 (43%)	25 (42%)	
Education level				
Undergraduate	12 (40%)	10 (33%)	22 (37%)	$\chi^2_1 = .29$ , $p = .789$
Senior high school	18 (60%)	20 (67%)	38 (63%)	
Sports event, n (%)				
Badminton	14 (47%)	15 (50%)	29 (48%)	$\chi^2_1 = .67$ , $p = .796$
Table tennis	16 (53%)	15 (50%)	31 (52%)	
Competitive level, n (%)				
Provincial level	5 (17%)	11 (37%)	16 (27%)	$\chi^2_2 = 3.15$ , $p = .207$
National level	23 (77%)	17 (57%)	40 (67%)	
International level	2 (6%)	2 (6%)	3 (5%)	

Note. Data are means (SD) or numbers (%); <sup>a</sup> combined participants of the International level and the National level together.

#### **5.4.2 Intervention Effects on Mental Health Literacy, Help-seeking Attitudes and Intentions**

Table 16 presents the descriptive statistics of the study outcomes (MHL, help-seeking attitudes and help-seeking intentions) for each group in the three assessments, including the mean, standard deviation, skewness and kurtosis.

Table 16.

*Descriptive statistics and distribution of the study variables in the pre-intervention, post-intervention and follow-up*

Measures	Pre-intervention (N = 60)				Post-intervention (N = 50)				Follow-up (N = 50)			
	M	SD	Skew	Kur	M	SD	Skew	Kur	M	SD	Skew	Kur
MHL												
MHL group	96.63	4.90	.50	-.85	103.13	5.99	.94	.12	106.83	6.72	2.36	.85
WCG	95.67	4.58	.60	-.85	95.26	5.70	.49	-.82	95.00	5.43	.18	-.76
Help-seeking attitudes												
MHL group	17.20	3.27	-.92	-.06	19.61	3.03	-.92	-.06	20.48	2.45	-.12	.20
WCG	15.97	3.75	.15	-.37	16.11	3.37	-.51	-.57	15.89	3.26	-.03	-.46
Help-seeking intentions												
MHL group	55.20	14.24	-.95	-.11	58.74	15.60	-1.28	-.27	59.00	14.75	-1.14	-.34
WCG	53.50	10.79	.50	-.09	54.89	9.69	.48	.34	55.11	9.17	.47	.25
Stigma												
MHL group	39.83	3.98	.60	-.36	37.09	4.56	1.41	-.65	35.65	4.13	.99	-.72
WCG	39.80	5.60	.06	-.78	39.81	5.55	-.33	-.61	39.74	5.40	-.54	-.36
Public stigma												
MHL group	34.33	2.80	2.55	-.21	32.35	3.87	2.78	-.89	31.30	3.35	2.21	-.82

WCG	33.17	4.15	.65	-.74	32.85	4.16	.15	-.63	32.81	4.24	-.07	-.27
Self-stigma												
MHL group	5.50	2.13	.43	.87	4.74	1.57	-.34	.70	4.35	1.30	-.43	.77
WCG	6.63	2.43	.15	.29	6.96	2.08	.04	.30	6.93	1.96	.38	.31

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Note. *M* = Mean; *SD* = Standard Deviation; Skew = Skewness; Kur = Kurtosis.

### *Mental Health Literacy*

A two-way repeated measures ANOVA was used to explore changes in each primary outcome across the three time points. As Mauchly's test of sphericity was significant, the Greenhouse-Geisser correction was used. The results showed a significant group-by-time interaction effect on MHL ( $F(2, 47) = 45.24, p < .001, \eta^2 = .485$ ) (see Figure 4). Post-hoc independent samples  $t$ -tests indicated that for the MHL group, the MHL scores were significantly higher in the post-intervention and follow-up tests compared with the WCG (see Table 17). Post-hoc paired samples  $t$ -tests also showed that for the MHL group, the MHL scores increased significantly from pre-test to post-test, from pre-test to follow-up test and from post-test to follow-up test. In contrast, for the WCG, the MHL scores did not improve significantly across the three assessments (see Table 18).

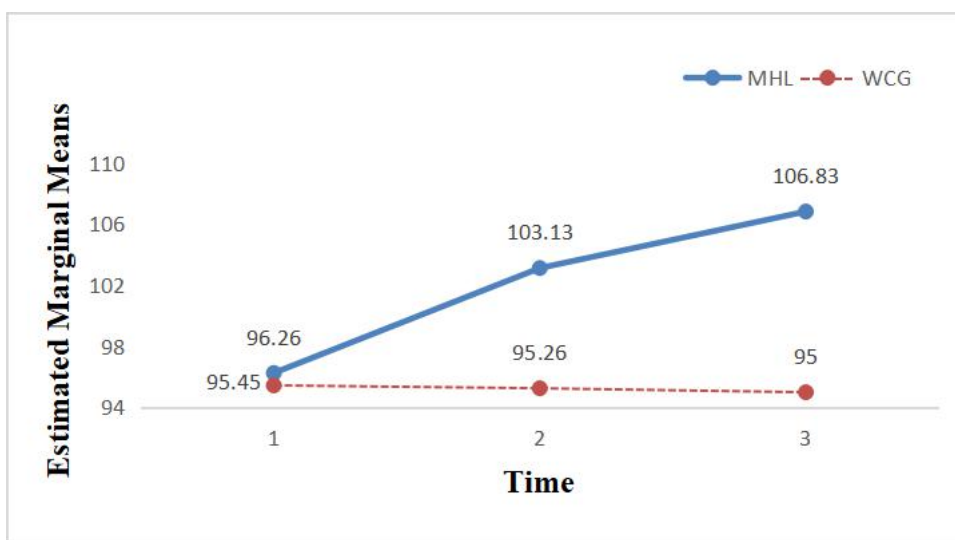


Figure 4 Estimated marginal means of mental health literacy



### *Help-seeking attitudes*

A two-way repeated measures ANOVA was used to test the group-by-time interaction effect in the pre-test, post-test and follow-up test. As Mauchly's test of sphericity was significant, the Greenhouse-Geisser correction was used. The results revealed a significant group-by-time interaction effect on help-seeking attitudes ( $F(2, 47) = 43.49, p < .001, \eta^2 = .475$ ) (see Figure 5). Post-hoc independent samples  $t$ -tests indicated that for the MHL group, the scores for help-seeking attitudes were significantly higher in the post-intervention and follow-up compared with the WCG (see Table 17). Post-hoc paired samples  $t$ -tests also showed that for the MHL group, the scores for help-seeking attitudes increased significantly from pre-test to post-test, from pre-test to follow-up test and from post-test to follow-up test. In contrast, in the WCG, the scores for help-seeking attitudes did not improve across the three assessments (see Table 18).

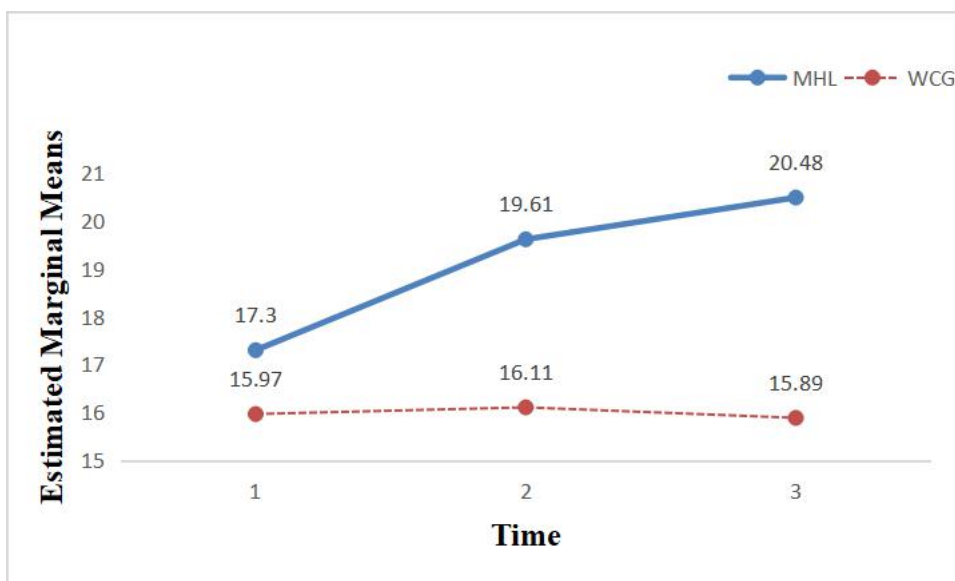


Figure 5 Estimated marginal means of help-seeking attitudes

### *Help-seeking intentions*

A two-way repeated measures ANOVA was used to evaluate the group-by-time interaction effect in the pre-test, post-test and follow-up test. As Mauchly's test of sphericity was significant, the Greenhouse-Geisser correction was applied. The results showed a significant group-by-time interaction effect on help-seeking intentions ( $F(2, 47) = 27.25, p < .001, \eta^2 = .362$ ) (see Figure 6). Post-hoc independent sample  $t$ -tests indicated that for the MHL group, the scores for help-seeking intentions did not significantly improve in the post-intervention and follow-up compared with the WCG (see Table 17). In addition, post-hoc paired samples  $t$ -tests showed that for the MHL group, the scores for help-seeking intentions increased significantly from pre-test to post-test and from pre-test to follow-up test, but did not significantly increase from post-test to follow-up test. In contrast, for the WCG, the scores for help-seeking intentions did not improve across the three assessments (see Table 18).

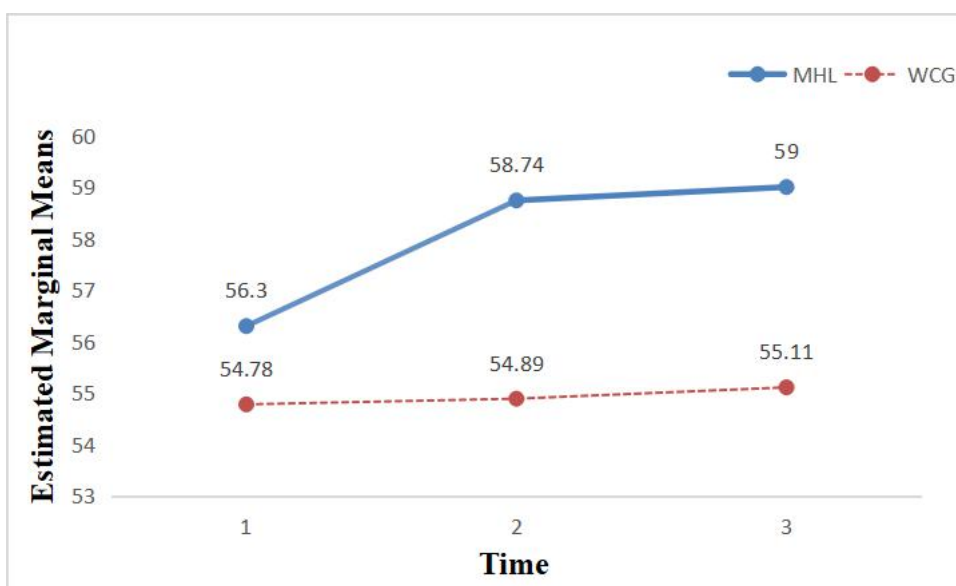


Figure 6 Estimated marginal means of help-seeking intentions

### 5.4.3 Intervention Effects on Stigma and Help-seeking Behaviours

#### *Stigma*

Table 16 presents the observed mean, standard deviation, skewness and kurtosis of the stigma outcomes for each group across the three assessments.

A two-way repeated measures ANOVA was used for each group to measure changes in stigma, public stigma and self-stigma across the three time points. As Mauchly's test of sphericity was significant, the Greenhouse-Geisser correction was used. The results showed significant group-by-time interaction effects on stigma ( $F(2, 47) = 17.35, p < .001, \eta^2 = .266$ ) (see Figure 7), public stigma ( $F(2, 47) = 10.22, p = .001, \eta^2 = .176$ ) (see Figure 8), and self-stigma ( $F(2, 47) = 11.34, p < .001, \eta^2 = .191$ ) (see Figure 9). Post-hoc independent samples *t*-tests indicated that for the MHL group, the scores for stigma were significantly higher in the follow-up test and the scores for self-stigma were significantly higher in the post-test and follow-up test compared with the WCG. However, the scores for public stigma did not change statistically in the post-test and follow-up test compared with the WCG (see Table 17). In addition, post-hoc paired samples *t*-tests showed that for the MHL group, the scores for stigma, public stigma and self-stigma increased significantly from pre-test to post-test, from pre-test to follow-up test and from post-test to follow-test. In contrast, for the WCG, the scores for stigma, public stigma and self-stigma did not improve across the three assessments (see Table 18).

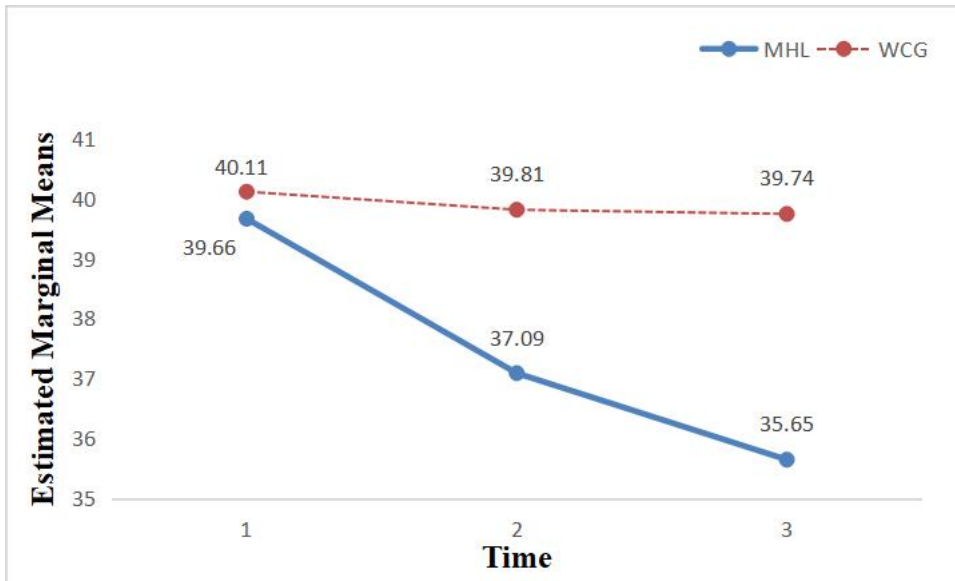


Figure 7 Estimated marginal means of stigma

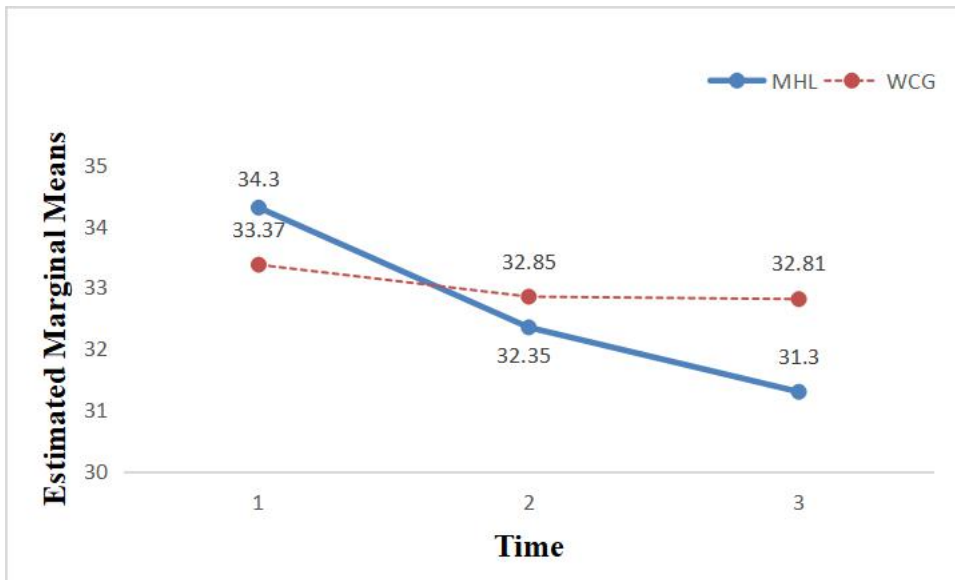


Figure 8 Estimated marginal means of public stigma

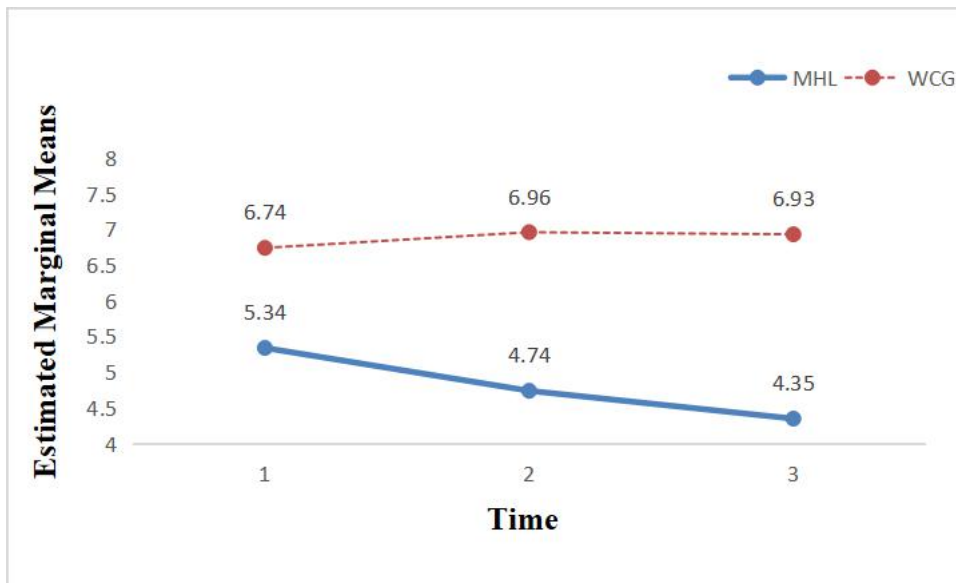


Figure 9 Estimated marginal means of self-stigma.

Table 17.

*Summaries of between-group independent sample t-test comparisons*

Variables	Pre-test (n = 60)			Post-test (n = 50)			Follow-up test (n = 50)		
	t value	p value	95%CI	t value	p value	95%CI	t value	p value	95%CI
MHL	.79	.433	[-1.49, 3.42]	4.75	.000	[4.54, 11.20]	6.88	.000	[8.37, 15.28]
Help-seeking attitudes	1.36	.18	[-.58, 3.05]	3.83	.000	[1.66, 5.33]	5.55	.000	[2.93, 6.25]
Help-seeking intentions	.52	.604	[-4.83, 8.23]	1.07	.292	[-3.42, 11.12]	1.14	.261	[-2.99, 10.77]
Stigma	.03	.979	[-2.48, 2.55]	-1.88	.066	[-5.65, .19]	-2.96	.005	[-6.86, -1.32]
Public stigma	1.28	.206	[-.66, 2.99]	-.44	.66	[-2.80, 1.79]	-1.38	.174	[-3.71, .69]
Self-stigma	-1.92	.06	[-2.31, .05]	-4.20	.000	[-3.29, -1.16]	-5.38	.000	[-3.54, -1.61]

Note. *CI* = confidence interval.

Table 18.

*Summaries of within-group paired sample t-test comparisons among pre-intervention, post-intervention, and follow-up*

Variables	Pre-test vs Post-test			Pre-test vs Follow-up test			Post-test vs Follow-up test		
	M Diff	t	df	M Diff	t	df	M Diff	t	df
MHL Group									
MHL	-6.87	-5.73**	22	-10.57	-7.66**	22	-3.70	-11.02**	22
Help-seeking attitudes	-2.30	-10.00**	22	-3.17	-8.84**	22	-.87	-3.33*	22
Help-seeking intentions	-2.43	-9.74**	22	-2.70	-7.65**	22	-.26	-.81	22
Stigma	2.57	4.35**	22	4.00	7.03**	22	1.43	8.16**	22
Public stigma	1.96	3.58*	22	3.00	6.16**	22	1.04	6.07**	22
Self-stigma	.61	2.95*	22	1.00	4.41**	22	.39	2.86*	22
WCG									
MHL	.185	.27	26	.44	.65	26	.26	1.02	26
Help-seeking attitudes	-.15	-.64	26	.07	.31	26	.22	1.30	26
Help-seeking intentions	-.11	-.59	26	-.33	-1.25	26	-.22	-1.36	26
Stigma	.30	.66	26	.37	.80	26	.07	.30	26
Public stigma	.52	1.37	26	.56	1.39	26	.04	.18	26
Self-stigma	-.22	-1.19	26	-.19	-.96	26	.04	.33	26

Note. \*  $P < .05$ , \*\* $P < .01$

### *Help-seeking behaviour*

Table 19 presents the proportion of help-seeking behaviours for each group across the three assessments.

Table 19.  
*Descriptive statistics and proportions of the study variables across pre-intervention, post-intervention, and follow-up.*

Measures	Pre-intervention (n = 60)		Post-intervention (n = 50)		Follow-up (n = 50)	
	n (total)	n (%)	n (total)	n (%)	n (total)	n (%)
Help-seeking behaviors (sought formal help)						
MHL group	30	6 (20%)	23	6 (26.09%)	23	7 (30.43%)
WCG	30	5 (16.67%)	27	6 (22.22%)	27	7 (25.92%)
Help-seeking behaviors (sought informal help)						
MHL group	30	7 (23.33%)	23	6 (26.09%)	23	6 (26.09%)
WCG	30	8 (26.67%)	27	8 (29.62%)	27	7 (25.92%)

Logistic regression was used to analyse the longitudinal binary data (help-seeking behaviour). The mean difference with a 95% confidence interval (95% *CI*) was reported. The group-by-time interaction effect for help-seeking from formal sources was not significant for the MHL group compared with the WCG in the post-intervention test (OR 1.00, 95% *CI* 0.17- 6.07,  $p = 1.00$ ) or follow-up test (OR .98, 95% *CI* 0.16-5.94,  $p = .99$ ). Similarly, the overall



group-by-time interaction effect for help-seeking from informal sources was not significant for the MHL group compared with the WCG in the post-intervention test (OR .83, 95% CI 0.15 - 4.66,  $p = .83$ ) or follow-up test (OR .83, 95% CI 0.14 - 4.91,  $p = .83$ ).

#### 5.4.4 Dropout Analyses

The dropout rate of participants was 16.6% (10/60) from pre- to post-intervention, 0% (0/50) from post- to follow-up intervention (see Table 20).  
Table 20.

*Dropout rate of participants at post-intervention*

Time point	MHL Group ( $N = 30$ ) ( $n, \%$ )	Waiting List Control Group ( $N = 30$ ) ( $n, \%$ )
Post-intervention	7 (23.3%)	3 (10%)
follow-up intervention	0 (0%)	0 (0%)

Table 21 compares the baseline characteristics of completers and dropouts at post intervention time points. For age, gender, education level, and training experience, there was no difference between the completers and the dropouts. However, They differed significantly in sport event. For competitive level, due to the number of the group less than 5, the significance was not tested.

Table 21

*Differences in the baseline characteristics of the completers and the dropouts at post intervention time point*

Characteristic	Completers ( <i>N</i> = 50)	Dropouts ( <i>N</i> = 10)	Total ( <i>N</i> = 60)	Test of significance
Age (years), mean (SD)	17.44 (1.67)	17.80 (1.93)	17.50 (1.70)	$t = -.607$ , $p = .422$
Training experience (years), mean (SD)	10.32 (1.94)	11.00 (2.94)	10.43 (2.13)	$t = -.922$ , $p = .127$
Gender, n (%)				
Male	28 (56%)	7 (70%)	35 (58%)	$\chi^2_1 = .67$ ,
Female	22 (44%)	3 (30%)	25 (42%)	$p = .499$
Education level				
Undergraduate	18 (36%)	4 (40%)	22 (37%)	$\chi^2_1 = .57$ ,
Senior high school	32 (64%)	6 (60%)	38 (63%)	$p = 1.000$
Sports event, n (%)				
Badminton	21 (42%)	8 (80%)	29 (48%)	$\chi^2_1 = 4.82$ ,
Table tennis	29 (58%)	2 (20%)	31 (52%)	$p = .039$
Competitive level, n (%)				
Provincial level	14 (28%)	2 (20%)	16 (27%)	
National level	33 (66%)	7 (70%)	40 (67%)	N/A
International level	3 (6%)	1 (10%)	3 (5%)	

Note. Data are means (SD) or numbers (%); N/A: Not applicable

#### **5.4.5 Quality Control Results**

##### ***Participation evaluation***

The results indicated that the participants responded favourably to the content and delivery of the intervention with an overall mean score of 4.52 (See appendix 6). For the last question, ‘Do you have any suggestions on how this programme can be improved?’, one participant answered, ‘more reading material on other elite athletes to effectively cope with severe injuries should be provided’. Another respondent mentioned the following: ‘it was hard to have a real conversation with my coach when I suffered from sleeping issues. She believed that it was due to thinking too much. Maybe the programme should be conducted with our coaches’.

##### ***Contamination check***

To test for possible contamination due to randomisation, during the 1-month follow-up, the participants in the WCG were asked whether they had received information about the intervention programme. The results showed that none of the participants had received knowledge and information about the content of the MHL intervention.

##### ***Manipulation check***

For the manipulation check, the participants received a score each week (see

appendix 7). The mean score for the eight weeks ranged from 80.87 to 91.52. The results for all participants in the MHL group showed that the manipulation check scores were high (over 80)

## **5.5 Discussion**

The intervention consisted of an eight-week MHL programme designed to enhance MHL, help-seeking attitudes and intentions, reduce the stigma and improve help-seeking behaviour among Chinese elite athletes. The results revealed that the participants in the MHL group showed improvements in MHL, help-seeking attitudes and intentions and less stigma to a greater extent than those in the WCG.

Specifically, Hypothesis 1 was supported. The MHL group had higher MHL scores than the WCG after the intervention, and the effect was maintained during the 1-month follow-up. Consistent with previous studies (Breslin et al., 2018a; Gulliver et al., 2012b), the intervention programme increased athletes' MHL. This intervention was designed to involve all components of MHL, such as symptom recognition, risk factors and attitudes towards mental health. In addition, it focused on recognising the differences between mental health symptoms and disorders and normal behaviour, an urgent need among athletes reported in Study 2. As suggested by the four-step process for mental health help-seeking proposed by Rickwood et al. (2005), sufficient knowledge of mental health disorders was indeed the first step to improve mental health help-seeking. Moreover, previous

research has shown that improving knowledge about mental health disorders can lead to further improvements in help-seeking attitudes, intentions and behaviours and reduce stigmas (Breslin et al., 2018a; Gulliver et al., 2012b). Therefore, the results of this study provided promising evidence that interventions focused on elite athletes can significantly improve MHL. Future studies should focus on raising awareness of mental health, such as identifying possible mental health symptoms and disorders, risk factors influencing elite athletes' mental health and relevant information and knowledge about mental health issues.

In terms of help-seeking attitudes, the MHL group had higher scores than the WCG after the intervention, and similar to the MHL results, the effect was sustained during the 1-month follow-up. These promising results are consistent with previous research (Kern et al. 2017; Pierce et al. 2010), indicating that the intervention programme increased athletes' help-seeking attitudes. In addition to MHL, help-seeking attitudes can affect people's willingness to deal with their personal mental health symptoms and disorders and their intention to seek appropriate help if necessary, according to the suggestions of the mental health help-seeking framework (Rickwood et al., 2005). Similar results were found in the parent group of athletes after receiving an MHL intervention programme in the sport context (Hurley et al., 2018). Previous studies have also shown that negative help-seeking attitudes are a major barrier to actual help-seeking behaviour (Gulliver et al., 2010; Wei et al., 2020). Therefore, the results of this study demonstrated that an MHL intervention programme for a targeted population can

lead to improvements in help-seeking attitudes, which can be useful for appropriate help-seeking behaviour if elite athletes struggle with mental health issues.

Another important result was that the MHL group had higher scores for help-seeking intentions than the WCG after the intervention, and the effect was maintained during the 1-month follow-up, similar to the results discussed above. Based on the mental health help-seeking process (Rickwood et al., 2005), help-seeking intentions could be achieved if the participants had the ability to recognise mental health symptoms and disorders and were aware of their need for support and the sources of help available, which were discussed in this MHL programme. The results are consistent with previous research, indicating an improvement in athletes' intention to seek help when experiencing mental health issues as a result of the mental health knowledge/awareness programme (Breslin et al., 2017a, 2018a; Kern et al., 2017). As help-seeking intentions were a positive indicator of help-seeking behaviour (Ajzen, 1991), further research is needed to enhance help-seeking intentions by offering more relevant mental health awareness intervention programmes. Moreover, due to the small sample size of this study, the gender effect was not investigated. Future studies should explore whether MHL interventions have a differential effect on male and female athletes (Gulliver et al., 2012b).

Unlike Hypothesis 1, Hypothesis 2 was not fully supported. It was encouraging to find a statistically significant reduction in stigmas in the MHL

group compared with the WCG after the intervention. In addition, the effect was maintained during the 1-month follow-up. Specifically, public stigma and self-stigma were found to be significantly reduced after the intervention in the MHL group compared with the WCG in the post-test and follow-up test. Similarly, the literature has shown that stigma is considered to be the most important factor preventing people from seeking help when they suffer from mental health issues. Moreover, as discussed in previous studies, public stigma and self-stigma are widespread among athletes (Gulliver et al., 2010; Bauman, 2016). Therefore, the anti-stigma approach should be highlighted to facilitate help-seeking behaviour to cope with mental health issues (Breslin et al., 2018a; Ferguson et al., 2018; Schinke et al., 2017). Consistent with previous research (Gulliver et al., 2012b), this intervention helped athletes reduce their stigma. As public stigma is the main form of stigma, future research should focus on reducing stigma among relevant people, such as coaches, support staff and parents, such as by conducting mental health knowledge/awareness/literacy intervention programmes (Bapat et al., 2009; Hurley et al., 2018; Sebbens et al., 2016).

According to the results of the systematic review of Study 1, few MHL interventions have investigated or discussed their effect on actual mental health help-seeking behaviour. This study found that the intervention had no effect on formal or informal help-seeking behaviour. However, the observed increase in the proportion of athletes in the MHL group seeking help from formal and informal sources from pre-intervention to post-intervention and follow-up intervention was

a promising result. Moreover, as athletes seeking professional help were excluded before the intervention, formal help-seeking behaviour referred to seeking help from coaches. It should be noted that some athletes reported seeking formal help from coaches and sport psychologists during the post-intervention and follow-up tests, providing promising results. One possible reason may be that actual help-seeking behaviour was expected if the participants had mental health symptoms and disorders and were therefore likely to feel the need to seek professional help (Gulliver et al., 2012b). Another possible reason may be that self-help strategies, recognised as a necessary approach to meet mental health needs based on suggestions from WHO (2009), were introduced in this programme. Some participants may use self-help strategies to deal with their personal mental health issues. Therefore, future studies focusing on facilitating the use of self-help strategies should consider informal and formal outreach programmes or materials (Rickwood & Bradford, 2012; Scott et al., 2015; Xu et al., 2018).

The external validity of the evaluation of this MHL intervention programme from the perspective of elite athletes showed that the participants appreciated the intervention programme and believed that its content was relevant, important, useful, understandable and engaging. In addition, based on the last question, two important suggestions from two participants offered potential areas for improvement for the intervention programme. The key role played by coaches in the mental health of their athletes was also highlighted in previous studies



(Ferguson et al., 2018; Mazzer & Rickwood, 2015). Therefore, coach-focused MHL interventions should be implemented in future research. Moreover, contamination prevention and check measures were used to ensure the effectiveness of the MHL intervention programme. Furthermore, the manipulation check results showed that the scores attributed to the participants confirmed the effectiveness of the manipulation. Future studies should take these steps seriously; otherwise, the results may be affected.

This study has several strengths. First, to the best of our knowledge, this study is the first to test the feasibility of targeting MHL, help-seeking attitudes, intentions and behaviours and stigmas in a face-to-face format among Chinese elite athletes while considering Chinese culture and China's unique Whole Nation sport system. Second, the participants were invited to complete individual homework exercises, provide feedback and read relevant materials after each class to make sure that they understood the content. Third, the participants were divided into small groups to ensure that they all took part in the discussion during each class to facilitate their participation in the entire intervention programme. Fourth, this study evaluated participation, thereby providing further information on its resulting improvements for future studies. For instance, more injury-oriented reading materials should be provided and coach-focused MHL interventions should be conducted. Fifth, possible contamination due to randomisation was checked after the follow-up test, verifying the effectiveness of this intervention.

However, this study also has limitations. First, the participants came from

two individual sports only, which did not reflect the diversity of sport, thereby potentially limiting the study's external validity. Second, in this study, formal help-seeking intentions were evaluated, whereas informal help-seeking intentions and self-help intentions were not because the current Chinese measures do not assess all aspects of help-seeking intentions. As this intervention focused on promoting formal help-seeking, informal help-seeking intentions and self-help intentions should be explored in future studies. Third, based on the study design, the conductor and the data analysts were not blinded, which may lead to potential bias. Therefore, the participants, data collectors, intervention conductors, outcome adjudicators and data analysts should be blinded in future studies based on the suggestions of the CONSORT procedure to reduce bias (Schulz et al., 2010). Fourth, the dropout rate was relatively high. Although we assumed a 25% dropout rate, the 16.67% dropout rate was still high. The main reasons were the unpredictable situation of COVID-19 in Wuhan, preventing face-to-face classes (six participants) and severe injury (two participants) in both groups. Future research should account for unexpected situations. Fifth, the follow-up test was conducted only one month after the intervention programme; therefore, the long-term effects and possible decay of effect were not reported. Future studies should examine the long-term effects of the programme. Sixth, Despite illustrating acceptable reliability for all measures, all measures were based on the self-reported. Although the manipulation check was conducted to test that they understood the content, the response bias and social desirability were might exist.

Therefore, future studies may wish to seek alternative manners of obtaining mental health and help-seeking data (Gorczyński et al., 2020b) Seventh, the whole study was not focused on the clinical measures of mental health and mental disorder. Future studies might seek outcomes related to the clinical measures of mental health and mental disorder. Thus, the clinical significance of the intervention requires further evidence to support (Gorczyński et al., 2020a; Henriksen et al., 2019; Moesch et al., 2018).

## **5.6 Conclusion**

In conclusion, this study was designed to develop and conduct an MHL intervention with Chinese elite athletes. The 8-week face-to-face MHL intervention programme with 120-minute classes per week delivered by experienced facilitators increased MHL, help-seeking attitudes and intentions and reduced stigmas in the MHL group compared with the WCG among Chinese elite athletes. However, formal and informal help-seeking behaviours were not statistically higher in the MHL group compared with the WCG. This intervention demonstrated the potential of MHL interventions to effectively target elite athletes and be integrated into cultural and organisational contexts. Indeed, this programme provided evidence of the acceptability, feasibility and effectiveness of face-to-face interventions to develop elite athletes' MHL and help-seeking and reduce their stigmas in the sport context. Future research in this area should use a larger sample sufficient to detect a moderate effect size. This study has practical

implications for interventions designed to promote MHL among Chinese elite athletes and provides knowledge for future research on MHL and help-seeking.

## **CHAPTER 6. General Discussion and Conclusion**

### **6.1 Summary**

There are three aims of the current study. Study 1 aimed to conduct a systematic review of MHL programmes and interventions for elite athletes seeking to increase their MHL, reduce stigma and improve their help-seeking attitudes, intentions and behaviours. Study 2 aimed to explore the athletes' existing help-seeking behaviors and explore the factors that may influence athletes' help-seeking behaviours by triangulating the perspectives of athletes, coaches and team officials. Study 3 aimed to examine the effectiveness of the MHL intervention programme to enhance MHL, help-seeking attitudes, intentions and behaviours and reduce stigma among Chinese elite athletes.

Specifically, Study 1 was a systematic review of five MHL interventions for athletes to enhance MHL, help-seeking attitudes, intentions and behaviours and reduce stigmas. Their effect was more significant in the intervention condition than in the no-treatment condition or other conditions comparing interventions. In addition, the five studies were systematically reviewed to provide recommendations to researchers in the process of designing and evaluating MHL studies. However, it should be noted that MHL programmes are a relatively new and developing research field, so researchers and sport practitioners should emphasise that there is still much work to be done in future studies.

Study 2 focused on semi-structured individual interviews with 20 elite

athletes, 12 coaches and 5 team officials, reporting a range of experiences in mental health, MHL, help-seeking and other factors affecting the mental health help-seeking of Chinese elite athletes, providing rich and meaningful information. Six main themes emerged from the data analysis: help-seeking behaviours, mental health experience, MHL, help-seeking attitudes, help-seeking intentions, and socio-cultural factors influencing athletes' mental health help-seeking. The results of this qualitative study can be used to guide future intervention studies related to the promotion of mental health and help-seeking among Chinese elite athletes. Indeed, mental health promotion programmes tailored to the needs of Chinese elite athletes and their continuing education are urgently needed.

Study 3 focused on the MHL intervention programme designed and implemented with Chinese elite athletes. The 8-week MHL intervention programme with 120-minute classes per week was delivered by experienced facilitators and led to an increase in MHL, help-seeking attitudes and intentions and a reduction in stigma in the MHL group compared with the WCG among Chinese elite athletes. However, formal and informal approaches were not statistically higher in the MHL group than in the WCG. Nevertheless, this intervention provided evidence of the acceptability, feasibility and effectiveness of MHL intervention programmes, demonstrating their potential to effectively target elite athletes and to be integrated into cultural and organisational contexts. This study has practical implications for interventions designed to promote MHL among Chinese elite athletes and provides knowledge for future research on MHL

and help-seeking.

## **6.2 Strengths and Limitations of the Thesis**

The strengths and limitations of each study conducted for this thesis are described in detail in their respective chapters. However, other strengths and limitations should be noted.

First, as MHL is not a theory for now, most studies of elite athletes have focused on evidence-based interventions. The proposed intervention programme was designed based on the process framework for help-seeking theory proposed by Rickwood et al. (2005). However, Spiker and Hammer (2019) suggested that MHL can be a theory to guide future studies to explain the important constructs and their interrelationships. Therefore, future research on MHL and help-seeking should place a strong emphasis on theory-based intervention programmes.

Second, in this study, both qualitative and quantitative approaches were used to collect data. Mixed methods approaches have been increasingly used in mental health research, which may be due to the fact that quantitative methods alone cannot adequately explore personal experience or knowledge (Davies, 2015; Dures et al., 2011; Palinkas et al., 2011). The reasons for using mixed methods included triangulation, complementarity and expansion, contributing to the interpretation of the results. Specifically, triangulation uses one type of data to confirm other types of data, complementarity is a way of using different approaches to answer related questions, and expansion means using qualitative

methods to discuss the results of the quantitative data analysed (Palinkas et al., 2011). Therefore, future studies should use the above methods to better answer the research questions.

Third, this study focused on elite athletes in individual sport. Although previous studies have shown that athletes in individual sport experience severe depression and anxiety compared with those in team sport (Pluhar et al., 2019; Yang, 2015), some team sport athletes also suffer from mental health symptoms and disorders (Rice et al., 2016). Future studies should consider implementing qualitative research and developing MHL interventions for elite athletes in team sport.

### **6.3 Implications of the Results**

This thesis has several theoretical implications. First, as demonstrated by Study 1, the field of MHL interventions without a scientific underpinning as discussed above. The proposed intervention programme was designed based on the process framework for help-seeking theory proposed by Rickwood et al. (2005). This thesis found that theory-guided face-to-face based MHL interventions were effective, which further suggests the importance and usefulness of theory in designing face-to-face delivered MHL interventions.

Furthermore, the help-seeking theory provided an effective theoretical underpinning for face-to-face based MHL interventions in this thesis. The findings of the intervention study verified the help-seeking theory's function and



generalizability in promoting MHL and help-seeking, and decreasing stigma, as well as advanced the application of the help-seeking theory for the Chinese elite athletes' population.

Third, as MHL is not a theory for now, most studies of elite athletes have focused on evidence-based interventions. However, Spiker and Hammer (2019) suggested that MHL can be a theory to guide future studies to explain important constructs and their interrelationships. Therefore, future research on MHL and help-seeking should place a strong emphasis on theory-based intervention programmes.

For the practical implications, in addition to the suggestions mentioned in the discussion section of the different chapters, the following suggestions are offered and summarised based on the results of each study. Based on the results of Study 1, several intervention studies focused on elite athletes were classified as low risk of bias. Therefore, future studies, including RCTs and other designs, should pay attention to their methodological quality. For interventions with elite athletes, a longitudinal study is suggested to monitor their mental health and their actual help-seeking behaviour and examine the effects of the interventions on elite athletes suffering from mental health issues. In addition, a larger sample is suggested for studies aiming to evaluate the effectiveness and applicability of MHL intervention programmes with elite athletes from different cultural backgrounds.

Furthermore, because the mental well-being of elite athletes will continue

to be a major concern for athletes, coaches, and sport organizations, MHL strategies also need to be evidence-based (Gorczyński et al., 2020a). Therefore, the researchers and psychology practitioners might consider what forms of mental health knowledge should be incorporated into the MHL construct in future studies (Spiker & Hammer, 2018). The results of this thesis could provide strong evidence of the content of MHL, which could further assist in designing and conducting the MHL intervention in elite athletes.

Based on their content, the characteristics of sporting events or mental health symptoms and disorders, MHL interventions should be developed for specific events or mental health issues. For instance, for athletes with eating disorders, especially those who participate in weight category sport, specific training interventions designed to improve their eating disorder MHL would be helpful (Worsfold & Sheffield, 2018). Considering the Chinese sport system, the sport environment paid more attention to performance (Si et al., 2012). Therefore, the elite athletes might suffer from mental health issues, however, it could be easily neglected. In addition, some evidence reported by Study 2 demonstrated that the Chinese sport system could cultivate abilities to overcome difficulties and resilience, which might further promote athletes' mental health (Coach 6). As the environment can nourish or malnourish the mental health of athletes (Henriksen et al., 2019), it is strongly recommended to focus on how to build a positive and supportive sport environment to nourish athletes' mental health. Given Chinese culture, it was found that there was a low perceived need for professional mental

health help for Chinese people (Shi et al., 2020). Thus, how to overcome those barriers such as low level of MHL and high level of stigma, and further promote mental health help-seeking should be highly emphasised. Moreover, as cultural issues can affect people's mental health symptoms and disorders, certain risk factors and mental well-being, more emphasis should be placed on cultural consideration in mental health interventions (Castaldelli-Maia et al., 2019; Gorczynski et al., 2020b; Rathod et al., 2019).

In terms of intervention format and participants, although MHL interventions delivered online are not as effective as face-to-face interventions based on the systematic review, MHL programmes are an effective approach to cope with unexpected situations when face-to-face interventions are not suitable. In addition, MHL intervention programmes should be offered and delivered to other stakeholders, such as coaches, team officials, supporting staff and parents, which can help elite athletes seek help when suffering from mental health issues (Castaldelli-Maia et al., 2019; Henriksen et al., 2019).

#### **6.4 Delimitations, Limitations and Assumptions of the Study**

Delimitations of the study include: 1) Convenience sampling was adopted in this study; 2) All data were collected through self-report instruments; and 3) Only elite athletes trained in mainland China were selected as subjects for the study.

Limitations of the study include: 1) The study only focused on Chinese

elite athletes, so its applicability to elite athletes from other countries needs to be tested; and 2) The results of the study may not be generalisable to all Chinese elite athletes due to the convenience sampling method used.

The following assumptions were held when conducting this study: 1) It was assumed that all elite athletes in the study were able to read and correctly understand the items included in the instruments; and 2) It was also assumed that all participants answered the questions posed during the interviews and those included in the instruments honestly.

## **6.4 Conclusion**

The aim of this thesis was to improve MHL and mental health help-seeking among Chinese elite athletes. To this end, three studies were conducted. Study 1 systematically reviewed the effectiveness of interventions designed to increase mental health help-seeking among athletes. Study 2 aimed to better understand mental health issues based on the experience, literacy, help-seeking attitudes, intentions and behaviours of elite athletes, taking into account China's culture and sport context. Based on the results of Study 1 and Study 2, an MHL intervention was designed and implemented with Chinese elite athletes to improve their MHL and help-seeking attitudes, intentions and behaviours and to reduce their stigma.

The systematic review showed that there is an urgent need for evidence-based and theory-based MHL intervention programmes designed to enhance MHL and help-seeking among athletes. In addition, the methodological

quality of research on interventions should be emphasised. Study 2 identified some key factors influencing mental health help-seeking among elite athletes. It provided important information for relevant interventions designed to promote mental health help-seeking among Chinese elite athletes. The intervention study showed that the 8-week face-to-face MHL intervention programme with 120-minute classes per week delivered by experienced facilitators increased MHL, help-seeking attitudes and intentions and reduced stigma in the MHL group compared with the WCG among Chinese elite athletes. This MHL programme demonstrated the acceptability, feasibility and effectiveness of face-to-face interventions to improve elite athletes' MHL and help-seeking in the sport context.

Based on the results of these studies, this MHL programme tailored to the needs of Chinese elite athletes responds to an urgent need. It can provide knowledge for future research on MHL and help-seeking among Chinese elite athletes, meeting the need for MHL educational programmes.

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## APPENDIX

### Appendix 1 PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
<b>TITLE</b>			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	55
<b>ABSTRACT</b>			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	ii,iii
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of what is already known.	55
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	55
<b>METHODS</b>			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	55-56
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	56-57

Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	55-56
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	56
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	57
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	57
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	57-58
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	58-59
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	59-60
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $I^2$ ) for each meta-analysis.	N/A
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	N/A
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
<b>RESULTS</b>			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	60,63

Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	60-62
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	80-83
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	68-79
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	N/A
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
<b>DISCUSSION</b>			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	84-93
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	93-94
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	95
<b>FUNDING</b>			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	N/A

*From:* Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: [www.prisma-statement.org](http://www.prisma-statement.org).

**Appendix 2 Quotes from the different types of participants on the meaning units of MHL, experience and help-seeking behaviour among Chinese elite athletes**

Theme	MU	Athletes	Coaches	Team Officials
Help-seeking behaviours	Seeking help through formal approaches	I asked for professional help from psychologists. My coach once suggested that I should ask for help. (from a sport psychologist) when I had mental health issues. My coach also explained that sport psychologists with professional knowledge can offer help to solve problems (Athlete10).	For older athletes, they usually ask me for help. Because they trust me. It may be due to my years of experience. Then we can communicate more freely. If I cannot solve their problems, I will do my best to seek help from others, such as sport psychologists or leaders (Coach 2).	There is increasing awareness of mental health issues, which could influence the training offered by some younger coaches. So they suggest their athletes to consult sports psychologists regularly (Team official 1).
	Seeking help through informal approaches	My teammates supported me. They organised some activities to comfort me, to make me feel better. I also asked my close friends for help with my emotional problems. For example, there was a time when I cried in the training centre because of my performance and the pressure, I felt awful. Then they said: ‘you have no choice, you have to accept it. You are an athlete, you must understand it’ (Athlete 14).	For younger players, they usually talk to their parents about mental health concerns. Some parents may mention trust and supporting behaviour, including giving feedback to coaches (Coach12).	I believe that athletes usually talk to their coach about the difficulties that may hinder their performance. It can involve mental and physical concerns. In addition, they can talk to their teammates. For example, I feel pressured about a test or a competition, or my injury makes me feel depressed (Team official 4).

	Positive self-help strategies	I prefer reading books and jogging to solve my mental health problems. My teammates like to write a diary or listen to songs (Athlete 10).	I told my athletes to record their performance-related issues, their anxiety, the difficulties they thought they could not solve. After that, they looked in books or on the Internet and tried to figure out what to do (Coach 8). They prefer smoking, drinking, and having fun with their friends, as a way of trying to cover it up. But I don't think the issues can be solved effectively that way. It just helps them to alleviate their negative emotions at the times they happen (Coach 5).	Self-regulation and relaxation can be adopted by athletes, such as listening to music, reading books, seeing friends, watching movies, and so on. They believe that it is an effective way to relax (Team official 2).
	Negative self-help strategies	Some of my teammates said that drinking alcohol would be an appropriate approach to alleviate their emotional problems, but I think it would just hide their problems rather than solve them (Athlete 10).		I know some players would like to drink to solve their problems. I am not sure whether it is effective or not (Team official 5).
Experiences of mental health	Depressed mood	I feel like I'm having a breakdown. I can't even train on the training ground. When I start training, I can't stop myself from crying. I even cried in a dream. I feel depressed, and am suffering as a result of training. I can't stand it. And I feel worthlessness about my training, about this game (Athlete 14).	One athlete got injured. She was afraid to practise the diving technique related to her injury. When I asked her to do this diving technique, she cried. This situation lasted for several months (Coach10)	Athletes suffer from depressive symptoms for various reasons, such as injury or weight control, but the main reason is poor performance (Team official 1).



Competitive anxiety	When I'm stressed, I tend to worry about training. And I can't sleep, I don't sleep all night, and I feel anxious. But when I can't sleep, I get more and more anxious. I don't know what to do (Athlete-14).	Some athletes might have pre-competitive anxiety. They can not perform well as usual due to muscle tension and sleep difficulties (Coach 9).	They felt anxiety before the competitions, especially for those significant upcoming competitions, such as the Whole National Game and championship which recognised as the most important competition each year. Muscle tension, loss of appetite and some other physical symptoms could be observed (Team official 4).
Sleep-related concerns	I just can't sleep. It's been a long time, about a year. I always feel tired. If you can't sleep well, you can't recover. Thus, I can't train well during the day (Athlete 10).	If athletes do not sleep well for a long time, it will affect their training qualities and competitive ability. Because they will feel tired all day and will not focus on training (Coach 3).	Not reported
Weight control issues	It is believed that weight control could influence the competition and mental health issues. It is hard to prepare for the competition after you lose your weight because you do not have enough energy to prepare. Negative emotions emerged. It could be an important issue for us (Athlete 3).	Not reported	In elite training, athletes suffer from eating and weight control problems. For example, athletes in weigh-ins sport, such as boxing, wrestling and lightweight rowing, need to control their weight for competition. However, they may suffer from anxiety due to their strict requirements and those of their coaches, thus inadequate intake and negative psychological states due to weight control can affect their

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				performance (Team official 5).
	Performance.	All of us are worried about poor performance, especially in the big competition, such as the Whole National Games. Firstly, we were afraid of being disappointed by families and coaches. Secondly, the benefits, including money, fame, and, even your future, would push you to think about the competition, the results. The more pre-competition anxiety had, the poor performance you got. (Athlete 2).	Athletes worry about a competition if they can't turn their stress into motivation immediately. With this negative thinking, their perception will worsen, which will increase their fear and worry. Thus, it can lead to poor performance and low participation in training (Coach 3).	I think the competition anxiety and stress-related issues could lead to the poor performance (Team official 3).
Mental health literacy	Inadequate knowledge of mental health	Because we haven't reached a very high level [of education], we probably don't know much about these things. Just like if I didn't know you, I would not know what sport psychology is. This means that understanding of mental health knowledge is limited in sport teams (Athlete 10).	The athletes didn't have enough mental health knowledge. The awareness of mental health issues was highly relevant to the accumulation of knowledge, thus, they might not aware of the importance of mental health (Coach 1).	The knowledge of mental health of elite athletes is insufficient. Education is important (Team official 4)

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Limited approaches to acquire mental health knowledge	Nowhere to get mental health knowledge (Athlete 11).	Limited approaches to get relevant mental health knowledge (Coach 2).	The way to acquire knowledge in sports field was limited. How to enhance interest in sport psychology and get involve in leaning mental health was of importance (Team official 1).
Some approaches to acquire mental health knowledge	I usually acquire mental health knowledge from the Internet, books, coaches and sport psychologists (Athlete 2).	Education is important for athletes. Relevant knowledge should be delivered by professionals, to tell them what mental health is and how to prevent and overcome these difficulties (Coach 1).	They might acquire mental health knowledge from books (Team official 1).
Limited knowledge of help available	I do not know where to get knowledge regarding help available (Athlete 11).	There is an ineffective approach to gain knowledge about mental health. Athletes can learn from the Internet or from coaches. But I am not sure that this is enough for them (Coach 6).	I think there is limited knowledge of help available. They might learn from sport psychologists or books (Team official 5).
Knowledge of available help	I was worried, so I preferred to read books to find ways to solve my problems (Athlete 9). I would like to learn more about psychology class and psychological consulting. Problems can't be solved with stuff online because the Internet doesn't know your specific problems, right (Athlete 10)?	I told them to learn this kind of knowledge from sport psychologists. But I think it should be learnt and cultivated from an early age (Coach 10).	Education related to these and counselling by sport psychologists may be the available approaches to seek help. In addition, they may gain relevant knowledge from the Internet, books, coaches and parents (Team official 5).

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Help-seeking attitudes	Public stigma	Athletes themselves are ashamed of having mental health issues, as the image they present to the public is supposed to be tough and strong. Athletes who have mental health issues are thought to have less self-confidence (Athlete 10).	As far as I know, some parents worry about their children and do not recognise their mental health problems. They believe that their children cannot be mentally weak (Coach6).	Because a scientific understanding of mental health is not fully accepted by both athletes and coaches, most of them believe that players don't have mental health problems. When experiencing mental health issues, they avoid admitting and facing them (Team official 4).
	Self-stigma	I thought about why I didn't go to see a sport psychologist. The answer was that I was shy and embarrassed. I was afraid of being found out by my coach or teammates. I should be confident, I should be mentally strong (Athlete 5).	Athletes are afraid of being perceived as weak (Coach-7).	Elite athletes prefer not to admit that they have mental health issues. They prefer to recognise their difficulties in terms of skills or physical aptitudes than psychological problems. They may feel embarrassed or ashamed (Team official 3).
	Positive attitudes	I think it is normal for athletes to experience mental health difficulties in training and competition. We suffer from the pressure of competition. We're just normal people (Athlete19).	From my perspective, I think this is a normal thing. Because everyone encounters adversities in their growth phase, both physically and mentally. I think we should face difficulties and find effective ways to solve problems (Coach8).	Not reported

Help-seeking intentions	Seeking help through formal approaches	The coach knows the athletes better. In other words, the coach understands the sport better. So I prefer to seek help from my coach (Athlete 7).	One player once said that she intended to seek help from a sport psychologist, to talk about some difficulties related to pre-competitive anxiety. She trained in the national team and felt the pressure from her coach and competitors on the same team (Coach 6).	Some of them (athletes) may ask their coaches for help when struggling with mental health issues, but it mainly depends on the relationship of trust between coaches and athletes (Team official 1).
	Seeking help through informal approaches	I prefer to seek help from my teammates who could understand this feeling and share my feelings. They can help me to analyze and solve the problem through their experience or understanding (Athlete 12).	Athletes prefer seeking help from teammates than sports psychologists. They intend to discuss their mental health issues or performance-related issues with their teammates (Coach 4).	Athletes may interact with their coach only during training. So they may seek help from their teammates and parents when they experience mental health (Team official 2).
	Self-help intention;	I prefer to cry, sing, or drink. I might not be able to solve my issues effectively, but I prefer to stay alone (Athlete 14).	For male athletes, they prefer self-adjustment because it's difficult to tell others. They believe that they have the ability to solve their problems (Coach 8).	Two possible reasons should be paid into attention. Firstly, they did not know where to find support if they suffering mental health-related issues. Secondly, they might prefer to choose self-help because of embarrassment (Team official 2).
Socio-cultural factors influencing	Support from coaches, teammates, friends, parents,	The coach's attitude was understandable and they were willing to support you (Athlete 2). Sports psychologists can provide effective approaches, information and services on mental health issues	Mutual help and encouraging words should be offered by teammates, which facilitate help-seeking. Team awareness and team importance are emphasised in our team (Coach	Mental health and personal development were also important. I would like to give fully supportive sources to assist athletes if they encountering what kinds of adversities or mental health issues

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g athletes’ mental health and help-seeking	team officials and sports psychologists Good relationships with others	because they are familiar with our teams and players (Athlete 19).  In our team,. (one athlete) has always been a model, a great example. We can all learn from him. This encourages us to be mentally strong (Athlete 20). The coach could encourage you if you told him the mental health issues. But it requires good relationships between coaches and athletes. Then, the athletes could talk about the issues openly (Athlete 2).	11).  Good relationships among players enabled them to develop mental health. They could support and encourage each other when suffering mental difficulties, and then they might find ways to solve these problems together. While, the bad results would be acquired if the relationships were unfriendly, accordingly (Coach 7). A good coach-athlete relationship can help identify mental health issues immediately, which benefits problem solving (Coach 5).	(Team official 4).  Some high-level elite athletes with excellent performance played core roles in the team. Others would like to behave in line with the excel model. Additionally, others preferred to seek help from the model when they struggling with difficulties, such as injuries or deficits in mental health-related areas. It benefits for both athletes and whole teams in terms of personal development and performance. Otherwise, the situation might be worse due to the unfriendly relationship or bad model behaviours (Team official 4). A good coach-athlete relationship can help athletes positively cope with stress or mental health issues (Team official 1).
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<p>Bad relationships with others</p>	<p>Sometimes there are conflicts between players. This type of situation can affect both the quality of training and emotions. Some hurtful words can be heard, which affects mental health (Athlete 12). My coach, he did not solve my problems. He tended to control my training and my life. My training schedule was delayed because we could not agree, which worried me about my performance and my future(Athlete 5).</p>	<p>Competitive relationships between athletes are quite common in our sport. Therefore, unhealthy relationships can influence their training. They can suffer from high performance pressure, affecting their mental health. In addition, they barely talk about their mental health issues and are worried about being perceived as weak (Coach 9). Some athletes who went to the national team did not get along well with the coach, and the quality of their training was weakened. During the training, they might have felt as if they were less valued, and then they probably lost interest in participating (Coach 12).</p>	<p>Some athletes in the national team can experience fierce competition with other teammates. In addition, conflicts with coaches cannot be fixed immediately. This type of situation can significantly affect the mental health of athletes because they may have negative emotions in training and competition (Team official 1).</p>
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Positive training environment;	A positive training environment can make you strong, both physically and mentally. You have confidence to overcome difficulties and stress (Athlete 8).	The positive sports environment means that principles and rules are followed, and rewards and punishments are fairly received. This is conducive to fostering the ability to deal with pressure and cultivate a supportive training environment (Coach 7).	The national table tennis team has done a good job in this area. Basically, each athlete has his or her characteristics. However, the whole team can overcome adversities together, whatever the difficulties. They suffered competitive stress, especially at the Olympics. Of course, it is believed that injuries, stress and sleep concerns related to mental health issues exist in every athlete. But they can solve these problems appropriately. Thus, it is an excellent model for every team (Team official 2).
Negative training environment	If the training centre cannot provide a good environment to improve performance, your mental health will be negatively affected (Athlete 5).	The sport environment focuses only on performance. Other aspects, including education, mental health and other skills, are ignored. So, both athletes and coaches feel great pressure related to performance (Coach12).	National teams emphasized the importance of mental health in recent years. However, the significance was not admitted by provincial teams. Thus, some of them concealed their personal feelings by only focusing on performance rather than mental health. It was hard for them to talk about mental issues freely and seek help directly (Team official 5).

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Positive influence of Chinese culture	Chinese culture can facilitate people's mental health because it teaches us that you must be responsible for your teams and society. Moreover, with the increase of knowledge in the public, [mental health issues] are more accepted by others (Athlete 5).	what we have learnt from the traditional culture, e.g. responsibilities and the spirit of 'never give up', can foster our ability to overcome difficulties, and contribute to the improvement of mental health and help-seeking behavior (Coach 6).	Morality, harmony and social responsibility are emphasised by Chinese traditional culture. This philosophy of life, including standards for how to cope with others, how to deal with difficulties, and how to offer information and services to help others, can promote athletes' mental health and encourage them to seek assistance (Team official 4).
Negative influence of Chinese culture	We suffer from competitive pressure because everyone tells you: 'you have the responsibility to fight for our teams'. I cannot tell my feelings to others. You know, in our culture, you are afraid of being perceived as weak. (Athlete 10)	In recent decades, our country has not paid attention to people's mental health, not only coaches and athletes, but also the general public. However, most athletes are unwilling to discuss their problems, especially mental health symptoms and disorders (Coach 2).	Not reported

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### Appendix 3 Expert evaluation on the Effectiveness, Suitability, and Feasibility of MHL program

Weeks	Week1		Week2		Week3		Week4		Week5		Week6		Week7		Week8	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Effectiveness	5	5	4	5	3	4	4	4	4	4	4	4	3	4	5	5
Suitability	5	5	4	5	4	4	4	4	5	5	4	5	4	4	5	5
Feasibility	4	5	5	5	5	5	4	4	5	5	4	5	4	4	5	5

Note: \*the values represent the lowest score of the two experts; 1st= the first round evaluation 1; 2<sup>nd</sup> = the second round evaluation

## Appendix 4 CONSORT 2010 checklist of information to include when reporting a randomised trial\*

Section/Topic	Item No	Checklist item	Reported on page No
<b>Title and abstract</b>			
	1a	Identification as a randomised trial in the title	P123
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	ii, iii
<b>Introduction</b>			
Background and objectives	2a	Scientific background and explanation of rationale	P123
	2b	Specific objectives or hypotheses	P123-124
<b>Methods</b>			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	P131
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	NA
Participants	4a	Eligibility criteria for participants	P132
	4b	Settings and locations where the data were collected	P136
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	P136-137, 234-241
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	P138-139
	6b	Any changes to trial outcomes after the trial commenced, with reasons	NA
Sample size	7a	How sample size was determined	P131-132
	7b	When applicable, explanation of any interim analyses and stopping guidelines	NA

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Randomisation			
Sequence generation	8a	Method used to generate the random allocation sequence	P133
	8b	Type of randomisation; details of any restriction (such as blocking and block size)	P133
Allocation	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers),	P133
Concealment mechanism		describing any steps taken to conceal the sequence until interventions were assigned	
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	P133
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	P131
	11b	If relevant, description of the similarity of interventions	NA
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	P142-143
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	NA
<b>Results</b>			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome	P133-135
	13b	For each group, losses and exclusions after randomisation, together with reasons	P135
Recruitment	14a	Dates defining the periods of recruitment and follow-up	P133
	14b	Why the trial ended or was stopped	NA
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	P143-144
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	P145-147
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	P148-155

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	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	P156-157
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	N/A
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	N/A
<b>Discussion</b>			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	P165-167
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	P164-165
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	P160-164
<b>Other information</b>			
Registration	23	Registration number and name of trial registry	N/A
Protocol	24	Where the full trial protocol can be accessed, if available	N/A
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	N/A

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## Appendix 5 MHL intervention contents

### MHL intervention contents of the 1<sup>st</sup> week: General introduction of mental health literacy and mental health

Aims	Educational contents	Group interactions	Time Allotted
To understand the basic concepts of mental health and mental health literacy.	1) what is mental health; 2) the distinguish among mental health, mental health disorders, mental health issues, and mental well-being	Discuss the past experience of mental health issues	35-min
	Relaxation/Toilet		5-min
	1) the common mental health issues and risk factors in athletes; 2) what is mental health literacy	Discuss the past experience of mental well-being	35-min
	1) a story on the mental illness of an elite athlete	Talk about the influence of mental health issues on performance and personal life	20-mins
	Homework exercises: 1) what I have learned; 2) have I suffered from mental health issues and have I asked for help.		30-min

**MHL intervention contents of the 2<sup>st</sup> week: Recognizing mental health symptoms and disorders and causes of mental health symptoms and disorders (Van Raalte et al., 2015)**

Aims	Educational contents	Group interactions	Time Allotted
To understand two types of mental health disorders: depression and anxiety	1) what is depression; 2) the depression symptoms, the influence on performance and sport participation, the causes of depression, the difficulty in the identification of depression, the depression and some potential risks	Information and discussion on depression symptoms vs regular behaviors	45-min
	Relaxation/Toilet		5-min
	1) what is anxiety disorders; 2) the anxiety symptoms, the types of anxiety disorders, the influence on performance and sport participation.	Information and discussion on anxiety symptoms vs regular behaviors	45-min
	Homework exercise and reading materials: 1) what I have learned; 2) the prevalence of depression and anxiety in athletes.		30-min

**MHL intervention contents of the 3<sup>rd</sup> week: Knowledge of mental health symptoms and disorders in sport** (Van Raalte et al., 2015)

Aims	Educational contents	Group interactions	Time Allotted
To understand two types of mental health disorders: eating disorders, sleep-related issues	1) What is eating disorders; 2) prevalence, risk factors and causes of eating disorders, types and identification of eating disorders, the influence on performance and sport participation	Information and discussion on eating disorders and disordered eating	45-min
	Relaxation/Toilet		5-min
	1) what is sleep-related issues; 2) types and identification of sleep-related issues; the influence on performance and sport participation	Information and discussion on sleep-related issues	45-min
	Homework exercise and reading materials: 1) what I have learned; 2) prevalence of eating disorders and sleep-related issues in athletes.		30-min



**MHL intervention contents of the 4<sup>th</sup> week: Knowledge of mental health symptoms and disorders and risk factors in sport**

(Kutcher et al., 2015; Van Raalte et al., 2015)

Aims	Educational contents	Group interactions	Time Allotted
To understand two risk factors and one mental health disorder: performance stress and injury, substance abuse	1) What is stress and stress reaction; 2) where the stress comes from and how to cope with the stress;	Information and discussion on competition stress	30-min
	Relaxation/Toilet		5-min
	1) the emotional reaction of injury; the influence on performance and sport participation;	Information and discussion on injury	30-min
	1) what is substance abuse; 2) alcohol abuse, stimulant-type substances and anabolic steroids use, the influence on performance and sport participation;	Information and discussion on substance abuse symptoms vs regular behaviors	30-min
Homework exercises and reading materials: 1) what I have learned; 2) prevalence of stress, injury, and substance abuse in athletes			30-min

**MHL intervention contents of the 5<sup>th</sup> week: Attitudes towards mental health and help-seeking** (Gulliver et al., 2012b; Kutcher et al., 2015)

Aims	Educational contents	Group interactions	Time Allotted
To understand stigma and the positive attitudes towards mental health	1)What is stigma; 2) how to deal with stigma	Raise awareness of the important influence of stigma	45-min
	Relaxation/Toilet		5-min
	1) the positive attitudes towards mental health; 2) the famous people attitudes when experienced mental heath disorders	Discussion on the positive attitudes towards mental illness and help-seeking	45-min
	Homework exercise and reading materials: 1) what I have learned; 2) the truth of stigma		30-min

**MHL intervention contents of the 6<sup>th</sup> week: Seek for help and support (Breslin et al., 2018a; Davies, 2015)**

Aims	Educational contents	Group interactions	Time Allotted
To acquire help-seeking resources	1) Professional help-seeking approaches and how to express personal problems;	Information and discussion on how to express personal problems	30-min
	Relaxation/Toilet		5-min
	1) self-help strategies;	Discussion on positive and negative self-help strategies	30-min
	1) informal help-seeking approaches; and 2) how to support your friends if they suffered from mental health issues	Information and discussion on how to formulate effective methods to overcome mental health issues	30-min
	Homework exercises and reading materials: 1) what I have learned; 2) how to support one who experienced recovery from mental health issues		30-min

**MHL intervention contents of the 7<sup>th</sup> week: Importance of Chinese culture and sports context** (Mo & Mak, 2009; Si et al., 2015)

Aims	Educational contents	Group interactions	Time Allotted
To understand the importance of Chinese culture and Chinese sports system	1) The characteristics of Chinese culture in mental health; 2) the inspiration on training and performance from Chinese culture;	Raise awareness of the important influence of Chinese culture	45-min
	Relaxation/Toilet		5-min
	1) the characteristics of Chinese sport system; 2) how to build positive relationships with coaches and teammates and formulate positive environments	Raise awareness of the importance of unique Whole-Nation system	45-min
	Homework exercise and reading materials: 1) what I have learned; 2)how to build good relationships with others		30-min

**MHL intervention contents of the 8<sup>th</sup> week: Comprehensive review and consolidation**

Aims	Educational contents	Group interactions	Time Allotted
To summarize and review the whole contents	1) What is mental health and mental health literacy	Discussion on the knowledge of mental health symptoms and disorders and well-being	40-min
	Relaxation/Toilet		5-min
	stigma and positive attitudes towards mental health and help-seeking;	Discussion on the influence of stigma of mental health issues and negative attitudes toward help-seeking	20-min
	1) help-seeking approaches: formal-, informal-, and self-help; 2) the importance of Chinese culture and Chinese sport system	Discussion on the actual help-seeking behaviors when experiencing mental health issues	30-min
	Homework exercises: 1) what I have learned		30-min

## Appendix 6 Mean participants feedback evaluation scores

Statement	Mean score (Range 1–5)
How satisfied are you with the entire contents of the classes?	4.39
How helpful do you think the entire contents of the classes have been?	4.35
How much did you enjoy the MHL program?	4.57
How much have you learned from the MHL program?	4.61
How important is the MHL program to you?	4.52
How easy are the entire contents of the classes?	4.65

### Appendix 7 Manipulation score of each week

Score	Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8
Mean	80.87	85.87	86.74	86.96	86.30	86.96	86.52	91.52
(SD)	(7.18)	(5.57)	(7.33)	(7.50)	(5.48)	(6.87)	(5.73)	(6.29)
Range	70-95	75-100	70-100	80-95	70-100	70-100	70-95	80-100

## **Appendix 8. Recruitment Announcements and Consent Form (For Study 2)**

*HONG KONG BAPTIST UNIVERSITY*

INFORMED CONSENT STATEMENT

(For Athletes)

**Mental Health Literacy and Help-Seeking Behaviours in Chinese Elite**

**Athletes**

### **INFORMATION**

You are invited to participate in a research study. The purpose of this study is to explore the existing mental health literacy and help-seeking behaviours, and the factors that may influence help-seeking behaviours in Chinese elite athletes.

Mental health literacy is defined as knowledge and beliefs about mental disorders which aid their recognition, management, or prevention. In the mental health context, help-seeking is an adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern. This interview aims to understand your personal experiences and feelings.

The interview will last around 30 minutes. You could drop out of the interview if any topic you felt uncomfortable or unwilling to discuss. If you don't understand anything during the process, please feel free to let us know.

### **CONFIDENTIALITY**



The interview will be recorded. All information you provided will be kept strictly confidential. Only the results of statistical analyses will be reported. In addition, all digital data will be destroyed within one year after the completion of this study.

### **BENEFITS AND RISKS**

No foreseeable risks or discomforts in the study. Findings of the current study can be used to guide future intervention studies related to the promotion of mental health and help-seeking among Chinese elite athletes by considering Chinese culture and Chinese sports system.

### **CONTACT**

If you have questions at any time about the study or the procedures, you may contact the researcher BU Danran, email: [17481791@life.hkbu.edu.hk](mailto:17481791@life.hkbu.edu.hk), and phone No.: [+852 97141577](tel:+85297141577), wechat No. [qq474865423](https://www.wechat.com/qrcode?qr_code=qq474865423). If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact the -Research Ethics Committee by email at [hkbu\\_rec@hkbu.edu.hk](mailto:hkbu_rec@hkbu.edu.hk) or by mail to Graduate School, Hong Kong Baptist University, Kowloon Tong, Hong Kong.

### **PARTICIPATION**

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise

entitled. If you withdraw from the study before data collection is completed your data will be destroyed.

### **CONSENT**

I have read and understand the above information. I have received a copy of this form. I agree to participate in this study.

Signature of the Subject \_\_\_\_\_ Date \_\_\_\_\_

Signature of the Investigator \_\_\_\_\_ Date \_\_\_\_\_

## 香港浸會大學 知情同意書 (運動員受訪人)

### **【中國精英運動員心理健康素養和求助行為的研究】**

#### **背景資料**

您受邀參加這項研究。本研究旨在瞭解中國精英運動員心理健康素養和求助行為,以及哪些因素可能影響求助行為。心理健康素養通常是指說明人們認識處理或者預防心理問題/疾病的相關知識和信念。在心理健康領域,求助行為是指在個體遇到心理健康問題時,試圖獲得外界幫助的適應性過程。此次訪談主要是想瞭解一下您與此相關的經歷和感受。

訪談大約會持續 30 分鐘左右。在這個過程中有任何不舒服或者不願意討論的,您可以隨時退出。在過程中您有任何不理解的地方,歡迎隨時向我們提出。

#### **隱私保障**

我們的訪談會進行錄音,但所有的個人資訊都不會外傳。訪談內容僅供

學術研究使用，並將會在一年以內銷毀。

## **研究效益與風險評估**

本研究不會給參與者帶來任何風險和不安。本研究的結果，在充分考慮中國文化和競技體育環境下，用來指導針對於中國精英運動員促進心理健康和求助的干預專案的發展。

## **聯絡資料**

如果您對此次調查有任何疑問，請聯繫研究人員卜丹冉。其郵箱為 [17481791@life.hkbu.edu.hk](mailto:17481791@life.hkbu.edu.hk)，電話為+852 97141577，微信號為 qq474865423。如果您覺得您的權益或隱私受到任何侵犯，歡迎您與香港浸會大學研究倫理委員會進行聯繫（郵箱為 [hkbu\\_rec@hkbu.edu.hk](mailto:hkbu_rec@hkbu.edu.hk)），或聯絡香港浸會大學研究生院。

## **參與條款**

您應出於自願參與此次研究，並有權拒絕參加而不受任何處罰。參與研究後，您有權在任何時候退出研究而不受任何懲罰，所享有的權益也不會受到損害。若您在資料收集完成前退出研究，您的資料將被退還或銷毀。

## **同意聲明**

我已閱讀並知悉以上資訊。我同意參與此次訪談。

受訪人簽名\_\_\_\_\_ 日期\_\_\_\_\_

研究人員簽名\_\_\_\_\_ 日期\_\_\_\_\_

**HONG KONG BAPTIST UNIVERSITY**

**INFORMED CONSENT STATEMENT**

(For Coaches)

**Mental Health Literacy and Help-Seeking Behaviours in Chinese Elite  
Athletes**

**INFORMATION**

You are invited to participate in a research study. The purpose of this study is to explore the existing mental health literacy and help-seeking behaviours, and the factors that may influence help-seeking behaviours in Chinese elite athletes.

Mental health literacy is defined as knowledge and beliefs about mental disorders which aid their recognition, management, or prevention. In the mental health context, help-seeking is an adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern. This interview aims to understand your personal views, experiences, and feelings as a coach.

The interview will last around 30 minutes. You could drop out of the interview if any topic you felt uncomfortable or unwilling to discuss. If you don't understand anything during the process, please feel free to let us know.

**CONFIDENTIALITY**

The interview will be recorded. All information you provided will be kept strictly confidential. Only the results of statistical analyses will be reported. In addition, all digital data will be destroyed within one year after the completion of

this study.

### **BENEFITS AND RISKS**

No foreseeable risks or discomforts in the study. Findings of the current study can be used to guide future intervention studies related to the promotion of mental health and help-seeking among Chinese elite athletes by considering Chinese culture and Chinese sports system.

### **CONTACT**

If you have questions at any time about the study or the procedures, you may contact the researcher BU Danran, email: 17481791@life.hkbu.edu.hk, and phone No.: +852 97141577, wechat No. qq474865423. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact the -Research Ethics Committee by email at hkbu\_rec@hkbu.edu.hk or by mail to Graduate School, Hong Kong Baptist University, Kowloon Tong, Hong Kong.

### **PARTICIPATION**

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be destroyed.

### **CONSENT**

I have read and understand the above information. I have received a copy of this form. I agree to participate in this study.

Signature of the Subject \_\_\_\_\_ Date \_\_\_\_\_

Signature of the Investigator \_\_\_\_\_ Date \_\_\_\_\_

香港浸會大學  
知情同意書  
(教練員受訪人)

中國精英運動員心理健康素養和求助行為的研究

**背景資料**

您受邀參加這項研究。本研究旨在瞭解中國精英運動員心理健康素養和求助行為,以及哪些因素可能影響求助行為。心理健康素養通常是指說明人們認識處理或者預防心理問題/疾病的相關知識和信念。在心理健康領域,求助行為是指在個體遇到心理健康問題時,試圖獲得外界幫助的適應性過程。此次訪談主要是想瞭解一下您作為教練員,與此相關的觀點、經歷和感受。

訪談大約會持續 30 分鐘左右。在這個過程中有任何不舒服或者不願意討論的,您可以隨時退出。在過程中您有任何不理解的地方,歡迎隨時向我們提出。

**隱私保障**

我們的訪談會進行錄音,但所有的個人資訊都不會外傳。訪談內容僅供學術研究使用,並將會在一年以內銷毀。

**研究效益與風險評估**

本研究不會給參與者帶來任何風險和不安。本研究的結果,在充分考慮中國文化和競技體育環境下,用來指導針對於中國精英運動員促進心理健康和求助的干預專案的發展。

## **聯絡資料**

如果您對此次調查有任何疑問，請聯繫研究人員卜丹冉。其郵箱為 [17481791@life.hkbu.edu.hk](mailto:17481791@life.hkbu.edu.hk)，電話為+852 97141577，微信號為 qq474865423。如果您覺得您的權益或隱私受到任何侵犯，歡迎您與香港浸會大學研究倫理委員會進行聯繫（郵箱為 [hkbu\\_rec@hkbu.edu.hk](mailto:hkbu_rec@hkbu.edu.hk)），或聯絡香港浸會大學研究生院。

## **參與條款**

您應出於自願參與此次研究，並有權拒絕參加而不受任何處罰。參與研究後，您有權在任何時候退出研究而不受任何懲罰，所享有的權益也不會受到損害。若您在資料收集完成前退出研究，您的資料將被退還或銷毀。

## **同意聲明**

我已閱讀並知悉以上資訊。我同意參與此次訪談。

受訪人簽名\_\_\_\_\_ 日期\_\_\_\_\_

研究人員簽名\_\_\_\_\_ 日期\_\_\_\_\_

**HONG KONG BAPTIST UNIVERSITY**

**INFORMED CONSENT STATEMENT**

(For Team Officials)

**Mental Health Literacy and Help-Seeking Behaviours in Chinese Elite**

**Athletes**

**INFORMATION**

You are invited to participate in a research study. The purpose of this study is to explore the existing mental health literacy and help-seeking behaviours, and the factors that may influence help-seeking behaviours in Chinese elite athletes.

Mental health literacy is defined as knowledge and beliefs about mental disorders which aid their recognition, management, or prevention. In the mental health context, help-seeking is an adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern. This interview aims to understand your personal views, experiences, and feelings as a team official

The interview will last around 30 minutes. You could drop out of the interview if any topic you felt uncomfortable or unwilling to discuss. If you don't understand anything during the process, please feel free to let us know.

**CONFIDENTIALITY**

The interview will be recorded. All information you provided will be kept strictly confidential. Only the results of statistical analyses will be reported. In addition, all digital data will be destroyed within one year after the completion of



this study.

### **BENEFITS AND RISKS**

No foreseeable risks or discomforts in the study. Findings of the current study can be used to guide future intervention studies related to the promotion of mental health and help-seeking among Chinese elite athletes by considering Chinese culture and Chinese sports system.

### **CONTACT**

If you have questions at any time about the study or the procedures, you may contact the researcher BU Danran, email: 17481791@life.hkbu.edu.hk, and phone No.: +852 97141577, wechat No. qq474865423. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact the -Research Ethics Committee by email at hkbu\_rec@hkbu.edu.hk or by mail to Graduate School, Hong Kong Baptist University, Kowloon Tong, Hong Kong.

### **PARTICIPATION**

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be destroyed.

### **CONSENT**

I have read and understand the above information. I have received a copy of this form. I agree to participate in this study.

Signature of the Subject \_\_\_\_\_ Date \_\_\_\_\_

Signature of the Investigator \_\_\_\_\_ Date \_\_\_\_\_

**香港浸會大學**  
**知情同意書**  
**(中心領導受訪人)**

**【中國精英運動員心理健康素養和求助行為的研究】**

**背景資料**

您受邀參加這項研究。本研究旨在瞭解中國精英運動員心理健康素養和求助行為,以及哪些因素可能影響求助行為。心理健康素養通常是指說明人們認識處理或者預防心理問題/疾病的相關知識和信念。在心理健康領域,求助行為是指在個體遇到心理健康問題時,試圖獲得外界幫助的適應性過程。此次訪談主要是想瞭解一下您作為中心領導,與此相關的觀點、態度和感受。

訪談大約會持續 30 分鐘左右。在這個過程中有任何不舒服或者不願意討論的,您可以隨時退出。在過程中您有任何不理解的地方,歡迎隨時向我們提出。

**隱私保障**

我們的訪談會進行錄音,但所有的個人資訊都不會外傳。訪談內容僅供學術研究使用,並將會在一年以內銷毀。

**研究效益與風險評估**

本研究不會給參與者帶來任何風險和不安。本研究的結果,在充分考慮中國文化和競技體育環境下,用來指導針對於中國精英運動員促進心理健康和求助的干預專案的發展。

**聯絡資料**

如果您對此次調查有任何疑問，請聯繫研究人員卜丹冉。其郵箱為 [17481791@life.hkbu.edu.hk](mailto:17481791@life.hkbu.edu.hk)，電話為+852 97141577，微信號為 qq474865423。如果您覺得您的權益或隱私受到任何侵犯，歡迎您與香港浸會大學研究倫理委員會進行聯繫（郵箱為 [hkbu\\_rec@hkbu.edu.hk](mailto:hkbu_rec@hkbu.edu.hk)），或聯絡香港浸會大學研究生院。

### **參與條款**

您應出於自願參與此次研究，並有權拒絕參加而不受任何處罰。參與研究後，您有權在任何時候退出研究而不受任何懲罰，所享有的權益也不會受到損害。若您在資料收集完成前退出研究，您的資料將被退還或銷毀。

### **同意聲明**

我已閱讀並知悉以上資訊。我同意參與此次訪談。

受訪人簽名\_\_\_\_\_ 日期\_\_\_\_\_

研究人員簽名\_\_\_\_\_ 日期\_\_\_\_\_

## Appendix 9. Interview Guidelines

### Interview Guidelines for Athletes

Age:

Gender:

Sport event:

Training experience:

Training level:

We want to know your personal experience as an athlete. Remember, there are no right or wrong answers.

1. What do you think mental health is?
2. Have you have mental health experience? Would you mind to explain specifically?
3. What is the help-seeking behaviours among athletes? Why?
4. What is the athletes' knowledge of mental health issues and risk factors?

What are the approaches to acquire knowledge and help?

5. What is the help-seeking attitudes and intentions among athletes? Why?
6. Is there any other factors impact help-seeking behaviours? Why?
7. Based on your personal experience, is there anything you want to talk about?

## Interview Guidelines for Coaches

Age:

Gender:

Sport event:

Coaching experience:

Coaching level:

We want to know your personal experience as a coach. Remember, there are no right or wrong answers.

1. What do you think mental health is?
2. Have your athletes have mental health experience? Would you mind to explain specifically?
3. What is the help-seeking behaviours among athletes? Why?
4. What is the athletes' knowledge of mental health issues and risk factors?  
What are the approaches to acquire knowledge and help?
5. What is the help-seeking attitudes and intentions among athletes? Why?
6. Is there any other factors impact help-seeking behaviours? Why?
7. Based on your personal experience, is there anything you want to talk about?

## Interview Guidelines for Team Officials

Age:

Gender:

Sport event:

Working experience:

We want to know your personal experience as a coach. Remember, there are no right or wrong answers.

1. What do you think mental health is?
2. Have your athletes have mental health experience? Would you mind to explain specifically?
3. What is the help-seeking behaviours among athletes? Why?
4. What is the athletes' knowledge of mental health issues and risk factors?

What are the approaches to acquire knowledge and help?

5. What is the help-seeking attitudes and intentions among athletes? Why?
6. Is there any other factors impact help-seeking behaviours? Why?
7. Based on your personal experience, is there anything you want to talk about?

## 運動員訪談提綱

### 【中國精英運動員心理健康素養和求助行為的研究】

1. 請填寫你的生日： 年 月 日
2. 請選擇您的性別： 女 / 男
3. 你的運動專案是什麼？
4. 你的訓練年限是多少年？
4. 你的運動級別是什麼？

我們想瞭解您對運動員心理健康和心理健康求助方面的一些看法。

1. 當我提到“心理健康”，你會想到些什麼？
2. 你覺得運動員常見的心理問題哪些？你覺得哪些事情會導致你產生心理健康的問題？你能具體的解釋一下嗎？
3. 你覺得運動員的求助行為有哪些？為什麼？
4. 你覺得運動員心理健康和誘發因素的知識有哪些？他們可以從哪些方式獲得心理健康的知識和獲得幫助的知識？
5. 你覺得運動員的求助態度和意向有哪些？為什麼？
6. 你覺得還有哪些其他因素影響了運動員的求助行為？為什麼？
7. 基於你的經驗，你還有什麼想要告訴我的嗎？

## 教練員訪談提綱

### 【中國精英運動員心理健康素養和求助行為的研究】

1. 年齡：
2. 請選擇您的性別： 女 / 男
3. 你在這個項目已經執教多少年：
4. 你在當前的這個隊伍當了多少年的教練：
5. 目前是什麼級別的教練員：

我們想瞭解您對運動員心理健康和心理健康求助方面的一些看法。

1. 當我提到“心理健康”，你會想到些什麼？
2. 你覺得運動員常見的心理問題哪些？你覺得哪些事情會導致你產生心理健康的問題？你能具體的解釋一下嗎？
3. 你覺得運動員的求助行為有哪些？為什麼？
4. 你覺得運動員心理健康和誘發因素的知識有哪些？他們可以從哪些方式獲得心理健康的知識和獲得幫助的知識？
5. 你覺得運動員的求助態度和意向有哪些？為什麼？
6. 你覺得還有哪些其他因素影響了運動員的求助行為？為什麼？
7. 基於你的經驗，你還有什麼想要告訴我的嗎？



## 中心領導訪談提綱)

### 【中國精英運動員心理健康素養和求助行為的研究】

1. 年齡：
2. 請選擇您的性別： 女 / 男
3. 您的工作時間已經多少年：

我們想瞭解您對運動員心理健康和心理健康求助方面的一些看法。

1. 當我提到“心理健康”，你會想到些什麼？
2. 你覺得運動員常見的心理問題哪些？你覺得哪些事情會導致你產生心理健康的問題？你能具體的解釋一下嗎？
3. 你覺得運動員的求助行為有哪些？為什麼？
4. 你覺得運動員心理健康和誘發因素的知識有哪些？他們可以從哪些方式獲得心理健康的知識和獲得幫助的知識？
5. 你覺得運動員的求助態度和意向有哪些？為什麼？
6. 你覺得還有哪些其他因素影響了運動員的求助行為？為什麼？
7. 基於你的經驗，你還有什麼想要告訴我的嗎？

**Appendix 10 Recruitment Announcements and Consent Form  
(For Study 3)**

**Hong Kong Baptist University**

**Informed Consent Statement**

**(For Athletes)**

**Mental Health Literacy and Help-Seeking Behaviours in Chinese Elite**

**Athletes**

**INFORMATION**

You are invited to participate in a research study in Sport and Physical Education Department, Hong Kong Baptist University. The main purpose of this study is to conduct an intervention to enhance mental health literacy and help-seeking behaviour among Chinese elite athletes. Mental health literacy is defined as knowledge and beliefs about mental disorders which aid their recognition, management, or prevention. In the mental health context, help-seeking is an adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern.

You are warmly invited to participate in a research study. All participating athletes were invited to attend a weekly educational session for eight weeks. Each session included a 90-minute educational class, and 30 minutes for an individual homework exercise and feedback. All participants will be divided in the two

groups. All participants will receive the same educational sessions in two different times. In addition, questionnaires will be used to collect each participant's information of socio-demographic characteristics, mental health literacy, help-seeking attitudes intentions, and behaviours, as well as stigma at pre-intervention, post-intervention, and follow-up. All information you provided will be kept strictly confidential. Only the results of statistical analyses will be reported.

### **BENEFITS AND RISKS**

No foreseeable risks or discomforts in the study. This study has practical implications for interventions designed to promote mental health literacy among Chinese elite athletes and provides knowledge for future research on mental health literacy and help-seeking.

### **CONTACT**

If you have questions at any time about the study or the procedures, you may contact the researcher BU Danran, email: [17481791@life.hkbu.edu.hk](mailto:17481791@life.hkbu.edu.hk), and phone No.: [+852 97141577](tel:+85297141577), wechat No. [qq474865423](https://www.whatsapp.com/channel/00299a00000000000000qq474865423). If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact the -Research Ethics Committee by email at [hkbu\\_rec@hkbu.edu.hk](mailto:hkbu_rec@hkbu.edu.hk) or by mail to Graduate School, Hong Kong Baptist University, Kowloon Tong, Hong Kong.

### **PARTICIPATION**

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. If you withdraw from the study before data collection is completed your data will be destroyed.

### **CONSENT**

I have read and understand the above information. I have received a copy of this form. I agree to participate in this study.

Signature of the Subject \_\_\_\_\_ Date \_\_\_\_\_

Signature of the Investigator \_\_\_\_\_ Date \_\_\_\_\_

## 香港浸會大學 知情同意書 (運動員參與者)

### 中國精英運動員心理健康素養和求助行為的研究

#### **背景資料**

親愛的先生/女士，香港浸會大學運動與體育學系正進行一項針對中國精英運動員心理健康素養和求助行為的干預研究，旨在幫助運動員增加心理健康素養和求助行為。心理健康素養通常是指說明人們認識處理或者預防心理問題/疾病的相關知識和信念。在心理健康領域，求助行為是指在個體遇到心理健康問題時，試圖獲得外界幫助的適應性過程。

我們誠摯邀請您參與本次研究。本次干預共計 8 周，每週一次課，每次課 90 分鐘，並在課後完成 30 分鐘的作業。本研究將隨機分成兩個組，兩個組分別在不同的時間內接受本次干預。在干預前、干預後和跟蹤期會對您的心理健康素養情況、求助態度、意向和行為情況、以及汙名化情況進行評估。本研究基於自願參加的原則，所有研究資料絕對保密。只有數據統計結果會被報告。

### **研究效益與風險評估**

本研究不會給參與者帶來任何風險和不安。本研究的結果，會提高中國精英運動員的心理健康素養和求助，並對未來的相關研究提供知識。

### **聯絡資料**

如果您對此次調查有任何疑問，請聯繫研究人員卜丹冉。其郵箱為 [17481791@life.hkbu.edu.hk](mailto:17481791@life.hkbu.edu.hk)，電話為+852 97141577，微信號為 [qq474865423](https://www.qq.com/)。如果您覺得您的權益或隱私受到任何侵犯，歡迎您與香港浸會大學研究倫理委員會進行聯繫（郵箱為 [hkbu\\_rec@hkbu.edu.hk](mailto:hkbu_rec@hkbu.edu.hk)），或聯絡香港浸會大學研究生院。

### **參與條款**

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### **同意聲明**

我已閱讀並知悉以上資訊。我同意參與此次研究。

參與者簽名\_\_\_\_\_ 日期\_\_\_\_\_

研究人員簽名\_\_\_\_\_ 日期\_\_\_\_\_

# **Hong Kong Baptist University**

## **Informed Consent Statement**

**(For Parents)**

### **Mental Health Literacy and Help-Seeking Behaviours in Chinese Elite**

#### **Athletes**

#### **INFORMATION**

You are invited to participate in a research study in Sport and Physical Education Department, Hong Kong Baptist University. The main purpose of this study is to conduct an intervention to enhance mental health literacy and help-seeking behaviour among Chinese elite athletes. Mental health literacy is defined as knowledge and beliefs about mental disorders which aid their recognition, management, or prevention. In the mental health context, help-seeking is an adaptive coping process that is the attempt to obtain external assistance to deal with a mental health concern.

Your children are warmly invited to participate in a research study. All participating athletes were invited to attend a weekly educational session for eight weeks. Each session included a 90-minute educational class, and 30 minutes for an individual homework exercise and feedback. All participants will be divided in the two groups. All participants will receive the same educational sessions in two different times. In addition, questionnaires will be used to collect each participant's information of socio-demographic characteristics, mental health

literacy, help-seeking attitudes intentions, and behaviours, as well as stigma at pre-intervention, post-intervention, and follow-up. All information you provided will be kept strictly confidential. Only the results of statistical analyses will be reported.

### **BENEFITS AND RISKS**

No foreseeable risks or discomforts in the study. This study has practical implications for interventions designed to promote mental health literacy among Chinese elite athletes and provides knowledge for future research on mental health literacy and help-seeking.

### **CONTACT**

If you have questions at any time about the study or the procedures, you may contact the researcher BU Danran, email: [17481791@life.hkbu.edu.hk](mailto:17481791@life.hkbu.edu.hk), and phone No.: [+852 97141577](tel:+85297141577), wechat No. [qq474865423](https://www.whatsapp.com/channel/0029va81111111111111111111). If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact the -Research Ethics Committee by email at [hkbu\\_rec@hkbu.edu.hk](mailto:hkbu_rec@hkbu.edu.hk) or by mail to Graduate School, Hong Kong Baptist University, Kowloon Tong, Hong Kong.

### **PARTICIPATION**

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise

entitled. If you withdraw from the study before data collection is completed your data will be destroyed.

### **CONSENT**

I have read and understand the above information. I have received a copy of this form. I agree my child to participate in this study.

I have read and understand the above information. I have received a copy of this form. I do not agree my child to participate in this study.

Signature of the Subject \_\_\_\_\_ Date \_\_\_\_\_

Signature of the Parent(s)/Guardian(s) \_\_\_\_\_ Date \_\_\_\_\_

Signature of the Investigator \_\_\_\_\_ Date \_\_\_\_\_

## 香港浸會大學 知情同意書 (18 歲以下運動員家長)

### 中國精英運動員心理健康素養和求助行為的研究

#### **背景資料**

親愛的先生/女士，香港浸會大學運動與體育學系正進行一項針對中國精英運動員心理健康素養和求助行為的干預研究，旨在幫助運動員增加心理健康素養和求助行為。心理健康素養通常是指說明人們認識處理或者預防心理問題/疾病的相關知識和信念。在心理健康領域，求助行為是指在個體遇到心理健康問題時，試圖獲得外界幫助的適應性過程。

經校方同意，我們誠摯邀請您的子女參與本次研究。本次干預共計 8 周，



每週一次課，每次課 90 分鐘，並在課後完成 30 分鐘的作業。本研究將隨機分成兩個組，兩個組分別在不同的時間內接受本次干預。在干預前、干預後和跟蹤期會對您子女的心理健康素養情況、求助態度、意向和行為情況、以及汙名化情況進行評估。本研究基於自願參加的原則，所有研究資料絕對保密。只有數據統計結果會被報告。

## **研究效益與風險評估**

本研究不會給參與者帶來任何風險和不安。本研究的結果，會提高中國精英運動員的心理健康素養和求助，並對未來的相關研究提供知識。

## **聯絡資料**

如果您對此次調查有任何疑問，請聯繫研究人員卜丹冉。其郵箱為 [17481791@life.hkbu.edu.hk](mailto:17481791@life.hkbu.edu.hk)，電話為+852 97141577，微信號為 [qq474865423](https://www.qq.com/)。如果您覺得您的權益或隱私受到任何侵犯，歡迎您與香港浸會大學研究倫理委員會進行聯繫（郵箱為 [hkbu\\_rec@hkbu.edu.hk](mailto:hkbu_rec@hkbu.edu.hk)），或聯絡香港浸會大學研究生院。

## **參與條款**

您應出於自願參與此次研究，並有權拒絕參加而不受任何處罰。參與研究後，您有權在任何時候退出研究而不受任何懲罰，所享有的權益也不會受到損害。若您在資料收集完成前退出研究，您的資料將被退還或銷毀。

## **同意聲明**

- 我已閱讀並知悉以上資訊。我同意讓子女參與此次研究。
- 我已閱讀並知悉以上資訊。我不同意讓子女參與此次研究。

運動員姓名 \_\_\_\_\_ 日期 \_\_\_\_\_

家長簽名 \_\_\_\_\_ 日期 \_\_\_\_\_

研究人員簽名 \_\_\_\_\_ 日期 \_\_\_\_\_



## Appendix 11. Expert Consultation Form

### Round 1

Dear \_\_\_\_\_,

We are going to design an mental health literacy program with the purpose to improve mental health literacy, help-seeking attitudes, intentions and behaviours, as well as reduce stigmas of Chinese elite athletes. Here, we would like to acquire your evaluation on the following indicators about this intervention program.

Please give your score in the following table according to 5-Likert Scale (very poor = 1, poor = 2, neutral = 3, good= 4 , very good = 5).

Week	Week	Week	Week	Week	Week	Week	Week	Week
	1	2	3	4	5	6	7	8
Effectiveness								
Suitability								
Feasibility								

Please list your opinions/suggestions regarding to any movement you scored less than 4.

Week 1:

---

Week 2:

---

Week 3:

---

Week 4:

---

Week 5:

---

Week 6:

---

Week 7:

---

Week 8:

---

Signature \_\_\_\_\_ Date \_\_\_\_\_

## Round 2

Dear \_\_\_\_\_,

Thank you so much for your kind comments and good suggestions on the design of this intervention program for improving mental health literacy, help-seeking attitudes, intentions and behaviours, as well as reducing stigmas of Chinese elite athletes. Below were the revisions I made according to your comments.

Revisions

Week 1:

---

Week 2:

---

Week 3:

---

Week 4:

---

Week 5:

---

Week 6:

---

Week 7:

---

Week 8:

---

Please give your score in the following table according to 5-Likert Scale

(very poor = 1, poor = 2, neutral = 3, good = 4, very good = 5).

Week	Week	Week	Week	Week	Week	Week	Week	Week
	1	2	3	4	5	6	7	8
Effectiveness								
Suitability								
Feasibility								

Finally, please give a total evaluation on this program. **Pass** **Fail**

*Any further*

*suggestion?* \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

## Appendix 12. Pilot Test from Athletes

Dear \_\_\_\_\_,

We are going to design an mental health literacy program with the purpose to improve mental health literacy, help-seeking attitudes, intentions and behaviours, as well as reduce stigmas of Chinese elite athletes. Here, we would like to acquire your evaluation on the following indicators about this intervention program.

Please kindly give your suggestions.

1. What do you think of the suitability of the intervention? Any suggestions?

---

2. What do you think of the feasibility of the intervention? Any suggestions?

---

3. What do you think of the accuracy of the materials? Any suggestions?

---

4. What do you think of the usability of the materials? Any suggestions?

---

5. Do you easily understood the content of the whole program? Any suggestions?

---

Signature \_\_\_\_\_ Date \_\_\_\_\_

尊敬的\_\_\_\_\_

我們將要進行一項運動員的心理健康素養的干預研究，旨在提高中國精英運動員的心理健康素養，求助態度、意向和行為，以及減少運動員的汙名化水準。我們想邀請您對改干預課程的以下幾個方面進行評估。歡迎給出您的任何寶貴意見。

1. 本課程的內容是否合適？有何建議？

---

2. 本課程的內容是否可行？有何建議？

---

3. 所提供的閱讀材料是否準確和本周的內容契合？有何建議？

---

4. 所提供的閱讀材料對您是否有用？有何建議？

---

5. 您是否能理解本課程的所有內容？有何建議？

---

運動員姓名\_\_\_\_\_ 日期\_\_\_\_\_



## Appendix 13. Mental Health Literacy Scale

Name: \_\_\_\_\_ Age: \_\_\_\_\_ Gender: \_\_\_\_\_ Education Level: \_\_\_\_\_  
 Sport event: \_\_\_\_\_ Training experience: \_\_\_\_\_ Training level: \_\_\_\_\_

The purpose of these questions is to gain an understanding of your knowledge of various aspects to do with mental health. When responding, we are interested in your degree of knowledge. Remember, there are no right or wrong answers, and just be honest. Please use the following scale to make your choice. Therefore when choosing your response, consider that:

1. Very unlikely = I am certain that it is NOT likely
2. Unlikely = I think it is unlikely but am not certain
3. Likely = I think it is likely but am not certain
4. Very Likely = I am certain that it IS very likely

Item	Very unlikely	Unlikely	Likely	Very Likely
1. If someone became extremely nervous or anxious in one or more situations with other people (e.g., a party) or performance situations (e.g., presenting at a meeting) in which they were afraid of being evaluated by others and that they would act in a way that was humiliating or feel embarrassed, then to what extent do you think it is likely they have <b>Social Phobia</b> .				
2. If someone experienced excessive worry about a number of events or activities where this level of concern was not warranted, had difficulty controlling this worry and had physical symptoms such as having tense muscles and feeling fatigued then to what extent do you think it is				

likely they have <b><u>Generalised Anxiety Disorder</u></b> .				
3. If someone experienced a low mood for two or more weeks, had a loss of pleasure or interest in their normal activities and experienced changes in their appetite and sleep then to what extent do you think it is likely they have <b><u>Major Depressive Disorder</u></b> .				
4. To what extent do you think it is likely that <b><u>Personality Disorders</u></b> are a category of mental illness.				
5. To what extent do you think it is likely that <b><u>Dysthymia</u></b> is a disorder.				
6. To what extent do you think it is likely that the diagnosis of <b><u>Agoraphobia</u></b> includes anxiety about situations where escape may be difficult or embarrassing.				
7. To what extent do you think it is likely that the diagnosis of <b><u>Bipolar Disorder</u></b> includes experiencing periods of elevated (i.e., high) and periods of depressed (i.e., low) mood.				
8. To what extent do you think it is likely that the diagnosis of <b><u>Drug Dependence</u></b> includes physical and psychological tolerance of the drug (i.e., require more of the drug to get the same effect).				
9. To what extent do you think it is likely that in general in China, <b><u>women are MORE likely to experience a mental illness of any kind compared to men.</u></b>				
10. To what extent do you think it is likely that in general, in Australia, <b><u>men are MORE likely to experience an anxiety disorder compared to women.</u></b>				

When choosing your response, consider that:

1. Very Unhelpful = I am certain that it is NOT helpful
2. Unhelpful = I think it is unhelpful but am not certain

- 3. Helpful = I think it is helpful but am not certain
- 4. Very Helpful = I am certain that it IS very helpful

Item	Very Unhelpful	Unhelpful	Helpful	Very Helpful
11. To what extent do you think it would be helpful for someone to <b>improve their quality of sleep</b> if they were having difficulties managing their emotions (e.g., becoming very anxious or depressed).				
12. To what extent do you think it would be helpful for someone to <b>avoid all activities or situations that made them feel anxious</b> if they were having difficulties managing their emotions.				

- 1. Very unlikely = I am certain that it is NOT likely
- 2. Unlikely = I think it is unlikely but am not certain
- 3. Likely = I think it is likely but am not certain
- 4. Very Likely = I am certain that it IS very likely

Item	Very unlikely	Unlikely	Likely	Very Likely
13. To what extent do you think it is likely that <b><u>Cognitive Behaviour Therapy (CBT)</u></b> is a therapy based on challenging negative thoughts and increasing helpful behaviours.				
14. Mental health professionals are bound by confidentiality; however there are certain conditions under which this does not apply.  To what extent do you think it is likely that the following is a condition that would allow a				

<p>mental health professional to break confidentiality:</p> <p><i>If you are at immediate risk of harm to yourself or others</i></p>				
<p>15. Mental health professionals are bound by confidentiality; however there are certain conditions under which this does not apply.</p> <p>To what extent do you think it is likely that the following is a condition that would allow a mental health professional to <b><u>break confidentiality</u></b>:</p> <p><i>if your problem is not life-threatening and they want to assist others to better support you</i></p>				

Please indicate to what extent you agree with the following statements

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
16. I am confident that I know where to seek information about mental illness.					
17. I am confident using the computer or telephone to seek information about mental illness.					
18. I am confident attending face to face appointments to seek information about mental illness (e.g., seeing the GP).					
19. I am confident I have access to resources (e.g., GP, internet, friends) that I can use to seek information about mental illness.					

20. People with a mental illness could snap out if it if they wanted.					
21. A mental illness is a sign of personal weakness.					
22. A mental illness is not a real medical illness.					
23. People with a mental illness are dangerous.					
24. It is best to avoid people with a mental illness so that you don't develop this problem.					
	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
25. If I had a mental illness I would not tell anyone.					
26. Seeing a mental health professional means you are not strong enough to manage your own difficulties.					
27. If I had a mental illness, I would not seek help from a mental health professional.					
28. I believe treatment for a mental illness, provided by a mental health professional, would not be effective.					

Please indicate to what extent you agree with the following statements:

	Definitely unwilling	Probably unwilling	Neither unwilling or willing	Probably willing	Definitely willing
29. How willing would you be to move next door to someone with a mental illness?					
30. How willing would you be to spend an evening socialising with someone with a mental illness?					
31. How willing would you be to make friends with someone with a mental illness?					
	Definitely unwilling	Probably unwilling	Neither unwilling or willing	Probably willing	Definitely willing
32. How willing would you be to have someone with a mental illness start working closely with you on a job?					
33. How willing would you be to employ someone if you knew they had a mental illness?					

姓名： \_\_\_\_\_ 年齡： \_\_\_\_\_ 性別： \_\_\_\_\_ 教育程度： \_\_\_\_\_  
 運動專案： \_\_\_\_\_ 運動年限： \_\_\_\_\_ 運動級別： \_\_\_\_\_

心理健康素養問卷

本問卷旨在了解您在心理健康的一些方面的知識。當您回答時，我們只是想了解您知識的相關程度。在選擇您的回復

時，請考慮：

1. 非常不可能 =我確定這不可能
2. 不太可能=我認為這不太可能但不確定
3. 可能=我認為這可能但不確定.
4. 非常可能=我確定這很可能

題目	非常不可能	不太可能	可能	非常可能
1. 在某一（些）場合下，如果一些人與他人共處時（如派對）或表現情景下（如開會時發言），他們害怕被別人評價，因而變得極度緊張或焦慮，並且表現出羞恥或尷尬。那麼你覺得他們患上社交恐懼症的可能性有多高？				
2. 如果某人對一些不確定性的事件或活動感到過度擔心，而且難以控制這種擔憂，同時伴隨有軀體症狀，例如肌肉緊張、感覺疲倦，那麼你認為他們患有廣泛性焦慮症的可能性有多高？				
3. 如果某人情緒低落持續兩周或是更久，對正常活動失去樂趣或興趣，並且在食欲和睡眠方面也發生了變化，那麼你認為他們患有重度抑鬱症的可能性有多高？				
4. 在多大程度上，你認為人格障礙可能是一種心理疾病？				
5. 在多大程度上，你認為心境障礙可能是一種疾病？				

6. 在多大程度上，你認為因尷尬或者難以避免的場景而感到焦慮是廣場恐懼症的表現。				
7. 在多大程度上，你認為雙相情感障礙的可能既包括某一時段的情緒高漲，又包括某一時段的情緒低落？				
8. 在多大程度上，你認為藥物依賴的診斷可能包括生理和心理的耐受性（即需要更多的藥物才能獲得相同的效果）。				
9. 在多大程度上，你認為中國的女性比男性更容易患心理疾病？				
10. 在多大程度上，你認為中國的男性比女性更容易患焦慮症？				

在進行回答時，請考慮：

1. 沒有任何幫助=我確定它沒有幫助
2. 沒有太大幫助=我覺得沒什麼幫助但是不確定
3. 有點幫助=我覺得有幫助但是不確定
4. 非常有幫助=我確定很有幫助

題目	沒有任何幫助	沒有幫助	有幫助	非常有幫助
11. 如果一些人在情緒管理上有困難時(例如，他們變得非常焦慮或抑鬱)，你認為提高他們的睡眠品質對此能有多大幫助？				
12. 如果一些人在情緒管理方面有困難，你認為避免所有讓他們感到焦慮的活動或情況對此有多大幫助？				

在選擇您的回復時，請考慮：



1. 非常不可能=我非常確信這不可能
2. 不太可能=我認為這不太可能但不確定
3. 可能=我認為這可能但不確定
4. 非常可能=我確定這很可能

題目	非常不可能	不太可能	可能	非常可能
13. 在多大程度上，你認為認知行為療法（CBT）是一種挑戰消極想法、增加有益行為的療法嗎？				
14. 心理健康專業人員受保密性原則約束，但在某些條件下這些原則可能不適用。你認為以下條件是否可能會允許心理健康專家違反保密原則： 如果你正面臨傷害自己或他人的風險。				
15. 心理健康專業人員受保密性原則約束，但在某些條件下這些原則可能不適用。你認為以下條件是否可能會允許心理健康專家違反保密原則： 如果你的問題不會危及生命時，但他們想幫助別人來更好的支持你。				

請選擇最符合你對以下問題的同意程度：

題目	非常不同意	不同意	中立	同意	非常同意
16. 我有信心知道在哪里可以找到關於心理問題的資訊。					
17. 我有信心能夠使用電腦或電話找關於心理問題的資訊。					

18.我有信心我可以從面對面的約談找到關於心理問題的資訊（例如看醫生）。					
19. 我有信心可以通過一些途徑（例如，醫生，互聯網，朋友）找到關於心理問題的資訊。					
20.對於患有心理問題的人來說，如果他們想，他們是可以自己走出來的。					
21.心理問題是一個人有弱點的象徵。					
22.心理問題不是真正的醫學疾病。					
23. 患有心理問題的人是危險的。					
24. 最好遠離患有心理問題的人，以免出現相同的問題					
25. 如果我有心理問題，我不會告訴任何人。					
26. 尋求心理健康專家幫助，意味著你不夠強大去解決自己的困難。					
27. 如果我有心理問題，我不會尋求心理健康專家的幫助。					
28. 我認為心理健康專家提供的治療心理問題的方法是沒有效果的。					
29. 你有多願意和有心理問題的人做鄰居？					
30. 你有多願意花一個晚上的時間與患有心理問題的人進行社交？					
31. 你有多願意與患有心理問題的人交朋友？					

32. 你有願意和一個患有心理問題的人開始在工作中密切合作?					
33. 如果你知道某人患有心理問題，你有多願意雇用他們?					

## Appendix 14. The Attitudes toward Seeking Professional Psychological Help-Seeking-Short Form

In the situation described below, please rate your possible reactions. Remember, there are no right or wrong answers, and just be honest. Please use the following scale to make your choice.

strongly disagree = 1; disagree = 2; agree = 3; strongly agree = 4

Item	1	2	3	4
1. If I thought I was having a mental breakdown, my first thought would be to get professional attention.				
2. Talking about problems with a psychologist seems to me as a poor way to get rid of emotional problems.				
3. If I were experiencing a serious emotional crisis, I would be sure that psychotherapy would be useful.				
4. I admire people who are willing to cope with their problems and fears without seeking professional help.				
5. I would want to get psychological help if I were worried or upset for a long period of time.				
6. I might want to have psychological counseling in the future.				
7. A person with an emotional problem is not likely to solve it alone; he or she is more likely to solve it with professional help.				
8. Given the amount of time and money involved in psychotherapy, I am not sure that it would benefit someone like me.				
9. People should solve their own problems, therefore, getting psychological counseling would be their last resort.				

10. Personal and emotional troubles, like most things in life, tend to work out by themselves.				
--	--	--	--	--

### 尋求專業性心理幫助態度問卷

在以下描述的情境中，對你可能出現的反應做出評定。你的答案沒有對錯之分。只需根據實際情況，如實回答即可。請使用下列的等級來做出你的選擇。

**非常不同意 = 1; 不同意 = 2; 同意 = 3; 非常同意 = 4**

題目	1	2	3	4
1、如果我認為我心理有嚴重的困擾，我願意去找專家幫助我。				
2、和心理專家談論自己的問題是解決問題的下策。				
3、如果我現在有很嚴重的情緒困擾，我相信心理專家可以幫助我解決。				
4、我很欽佩一個人可以克服他心理上的困擾，不用去找心理專家。				
5、如果我長期陷入困擾當中，我願意接受心理諮詢。				
6、未來也許我會去找心理專家。				
7、一個人不太容易自己解決情緒上的困擾，在專家的幫助下才比較容易解決。				
8、心理諮詢要花很長的時間，甚至很多錢，所以我懷疑它的價值。				
9、一個人應該自己解決自己的問題，萬不得已才會找心理專家。				
10、情緒上的困擾和其他問題一樣都可以自行解決。				

## Appendix 15. The Intention of Seeking Counseling Inventory

If you have not experienced the following problems, please assume the possibility of going to seek counseling services when you experience these problems. Remember, there are no right or wrong answers, and just be honest. Please use the following scale to make your choice.

Very unlikely = 1; Possible unlikely = 2; unlikely = 3; likely = 4; Possible likely = 5; Very likely = 6

Area of concern	1	2	3	4	5	6
1. Excessive alcohol use						
2. Relationship difficulty						
3. Concerns with close relationships						
4. Depression						
5. Conflict with parents						
6. Speech anxiety						
7. Difficulties dating						

8. Choosing major						
9. Difficulty sleeping						
10. Drug problems						
11. Feelings of inferiority						
12. Competition anxiety						
13. Difficulty with friends						
14. Academic procrastination						
15. Self-understanding						
16. Loneliness						

### 尋求幫助意向問卷

如果沒有經歷過以下問題，請假設自己經歷這些問題時去心理諮詢的可能性。你的答案沒有對錯之分。只需根據實際情況，如實回答即可。請使用下列的等級來做出你的選擇。

非常不可能 = 1； 比較不可能 = 2； 不可能 = 3； 可能 = 4； 比較可能 = 5； 非常可能 = 6

題目	1	2	3	4	5	6
----	---	---	---	---	---	---

1. 因過度酒精濫用而尋求專業心理幫助						
2. 因人際困難而尋求專業心理幫助						
3. 因對親密關係的焦慮而尋求專業心理幫助						
4. 因抑鬱而尋求專業心理幫助						
5. 因與父母有衝突而尋求專業心理幫助						
6. 因言語焦慮而尋求專業心理幫助						
7. 因約會困難而尋求專業心理幫助						
8. 因選擇專業而尋求專業心理幫助						
9. 因睡眠困難而尋求專業心理幫助						
10. 因藥物濫用而尋求專業心理幫助						
11. 因自卑而尋求專業心理幫助						
12. 因比賽焦慮而尋求專業心理幫助						
13. 因與朋友相處困難而尋求專業心理幫助						
14. 因學業延遲而尋求專業心理幫助						



15. 因自我理解而尋求專業心理幫助						
16. 因孤獨而尋求專業心理幫助						

## Appendix 16. The Perceived Devaluation-Discrimination Scale

In the situation described below, please rate your possible reactions. Remember, there are no right or wrong answers, and just be honest. Please use the following scale to make your choice.

strongly disagree = 1; disagree = 2; not sure = 3; agree = 4; strongly agree = 5

Item	1	2	3	4	5
1. Most people would accept a person who has been in a mental hospital as a friend.					
2. Most people believe that a person who has been hospitalized for a mental problem is just as intelligent as the average person.					
3. Most young women would be reluctant to date a man who has been hospitalized for a severe mental problem					
4. Most people would accept a person who has fully recovered from a mental problem as a teacher of young children in a public school.					
5. Most people believe that entering a mental hospital is a sign of personal failure.					
6. Most employers will hire someone who has had a mental problem if he or she is qualified for the job.					
7. Most people think less of a person who has been in a mental hospital.					
8. Most people in my community would treat someone who has had a mental problem just as they would treat anyone else.					
9. Most people would not hire someone who has had a mental problem to take care of their children, even if he or she had been well for some time					

10. Most employers will pass over the application of someone who has had a mental problem in favor of another applicant.					
11. Most people believe that a person who has had a mental problem is just as trustworthy as the average citizen.					
12. Once they know a person was in a mental hospital, most people will take his or her opinions less seriously.					
13. I am willing to be friends with people who have been in a mental hospital					
14. I would think less of a person who has been in a mental hospital.					
15. I think people who have been in a mental hospital are as trustworthy as ordinary people.					

### 知覺到貶值歧視量表

在以下描述的情境中，對你可能出現的反應做出評定。你的答案沒有對錯之分。只需根據實際情況，如實回答即可。請使用下列的等級來做出你的選擇。

完全不符合 = 1；比較不符合 = 2；不能確定 = 3；比較符合 = 4；完全符合 = 5

題目	1	2	3	4	5
1.大多數人都不介意和有過心理問題的人做好朋友。					
2.大多數人都認為在智力方面，因心理問題就醫的人和普通人沒有差別。					
3.大多數年輕女性都不願和有過嚴重心理問題的男人約會。					
4.大多數人都願意接受有過心理問題但已完全康復的人做小學老師。					
5.大多數人都覺得因為心理問題就醫是個人生活失敗的標誌。					
6.如果有過心理問題的人適合某工作崗位，大多數單位會願意雇用他。					
7.大多數人對因為心理問題就醫的人不會有過高的評價。					
8.在我住的地方，大多數人對待有過心理問題的人和對待其他人沒什麼差別。					
9.大多數人不會雇有過心理問題的人去照顧自己的孩子，即使他已經康復很久了。					

10. 當應聘者條件相當時，大多數單位更傾向於普通人，而不是有心理問題的人。					
11. 大多數人都認為有過心理問題的人和普通人一樣值得信賴。					
12. 大多數人一旦知道某人因為心理問題就醫，就不太會把他當回事。					
13. 我願意與接受過心理治療的人做好朋友。					
14. 我會輕視那些曾接受過心理治療的人。					
15. 我認為接受過心理治療的人和普通人一樣值得信賴。					

## Appendix 17. The Actual Help-Seeking Questionnaire

When you were having a mental or emotional problem during the past three (one) month(s), how likely is it that you would seek help from the following people. Please briefly described your problems. Remember, there are no right or wrong answers, and just be honest.

	Yes	Briefly described your problems
a) Intimate partner (e.g., girlfriend, boyfriend)		
b) Friends/teammates		
c) Parents		
d) Other relative/family member		
e) Mental health professional (e.g. clinical psychologist, sport psychologists)		
f) Phone helpline		
g) Doctor/GP		
h) Coach		

請指出如果你在過去 3(1)個月內，遇到個人或情緒問題時，你會在多大程度上向他尋求幫助。請簡要說明你遇到的問題。你的答案沒有對錯之分。只需根據實際情況，如實回答即可。

	是	請簡要說明你的問題
a) 伴侶（男女朋友）		
b) 朋友、隊友		
c) 父母		
d) 家庭其他成員、親屬		
e) 心理專業人員（如臨床心理諮詢師、運動心理諮詢師）		
f) 求助熱線		
g) 臨床醫生		
h) 教練		

## **CURRICULUM VITAE**

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