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Kawa model on mental health, sports and physical performance: A mini review

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ABSTRACT

Successful sports performance is characterized by psychological, physical, technical, and tactical factors. Of these factors, the psychological factor is typically ignored despite contributing more than 50% toward success in sporting performance. This review aimed to introduce the Kawa model as a new methodology to promote sports and physical performance through developing mental health ability. The Kawa model is developed by occupational therapists and used to promote mental health ability in individuals by enabling self-awareness of their difficulties and exploring possible solutions. It consists of the following five elements: water, river banks, rocks, driftwood, and space. This research would further explore the usage of the Kawa model in addressing various psychological issues and how these improvements can enhance sports and physical performance. The literature search was performed by using Google Scholar, PubMed, Web of Science and Scopus as a database with specific keywords. In conclusion, this research provides an overview of the potential for the use of the Kawa model in promoting mental health ability included self-awareness, self-understanding, goal-setting, self-efficacy, stress and anxiety control for sports and physical performance and lays the foundation for future research in this area.

Introduction

Success or failure in sports performance depends on multiple factors such as, psychological, physical, technical, and tactical factors. Athletes and coaches often dedicate the significant attention to technical skills, game strategies and physical condition while psychological factor is typically receiving little attention. In sports psychology, mental health and well-being is widely recognized as the important role in promoting athletic success. Brewer (2009) emphasized that psychological factors can be a critically determining factors between winning and losing in sports performance. Supporting to Brewer's assertion, research by Weinberg and Gould (2003) indicated that mental health ability contributed to more than 50% of sports performance success. Through the past researches to identify that the ability to administrate the psychological health such as, thoughts, emotions and mindset of oneself, can critically impact an athlete's capability to achieve peak performance on the court.

One of the critical psychological factors that directly influence athletic performance is self-efficacy. Self-efficacy, known as self-confidence, represents as one's belief in their abilities to successfully perform tasks and achieve goal (Al-Mwadih et al., 2021). Athletes with optimal level of self-efficacy are more confidence, resilience and willing to take challenges to approach competition (Develos-Sacdalan & Bozkus, 2018; Zilka et al., 2018). This self-assurance allows athletes to perform well even when face with adversity or under pressure.

Furthermore, goal-setting also plays an important role in developing an athlete's mental health and driving their performance. Setting a challenging and clear goal able to enhance athlete's concentration and provide them with direction (Dostson, 2016). This can promote athlete's motivation and commitment in achieving the desired outcomes. A well-structured and achievable goal able to assist athletes to maintain a sense of purpose, measure their progress and stay motivated throughout

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training (Hudig et al., 2022; Rowe et al., 2016).

It is also important to recognize the potential impact of stress and anxiety on athletic performance while goal-setting and self-efficacy provide athletes with positive outcomes. Optimal stress is crucial psychological factor in optimizing athletic performance. It can play as the role of motivation to drive athlete to achieve their desired outcome and adapt to the surroundings (Shahsavarani et al., 2015). However, athletes are vulnerable to excessive stress, which this can drive to anxiety if it is unwell treated (Santos et al., 2020). Athletes with excessive stress and anxiety always drive to hinder and impair of concentration, decision-making abilities, physical coordination, motivation and overall performance (Khan et al., 2017).

To optimize athletic performance and well-being, it is crucial for athletes and coaches to recognize the interaction between these psychological factors. By investing in psychological factors, athletes can promote their abilities in coping stress and anxiety, foster mental resilience and maintain a positive mindset in facing the challenging circumstances (Yuceant, 2022; Idris et al., 2019). Building upon these principles, this review aims to investigate a new methodology regarding the utility of the Kawa model in mental health as applied to sports and exercise performance.

Kawa is the Japanese word of river. The development of this model was initiated by Japanese-Canadian occupational therapist, Dr. Michael Iwama. The Kawa model focused heavily on how individual's environmental contexts impact the harmony of their life flow (Ober et al., 2022). It uses the river as a metaphor to describe life as a river, flowing from the top land to the bottom of ocean that refers as the beginning of an individual's life to the death or the accomplishment of goal. Along this path, the quality of flow will vary according to the environment and interactions with the other elements (Teoh & Iwama, 2015), which represent as individuals will interact and encounter different circumstances, challenges, people and environments before the goal achieved.

Kawa model consists of the following five elements: water representing the flow of the life course, river banks representing various environmental factors – including physical and social, rocks representing challenges and obstacles, driftwood representing personal abilities and space representing opportunities for improving flow (Teoh & Iwama, 2015). The use of Kawa model is to increase individual's self-awareness and connection of their life goal, abilities and environments (Ober et al., 2022). Throughout the connection, individuals might encounter different challenges and difficulties, which this might drive to stress, anxiety and hinder the goal in life. Therefore, development plans, which represents as space element in Kawa model, might be created to counter the difficulties to achieve well-being and regain self-efficacy in life.

The Kawa model is frequently used in occupational therapy (OT) practice instead of sports and exercise performance. There are few existing studies related to the effect of Kawa model on sports and exercise performance. To further understand how this model can be applied to sports and exercise performance, this manuscript will review the studies examining the Kawa model's relevance to mental health ability that have the potential to enhance sports and exercise performance.

Methods

Search strategy

The papers included in this review were related to the Kawa model, mental health ability, as well as sports and exercise performance. They were identified *via* searching the Google Scholar, PubMed, Web of Science and Scopus in English language database. The search keywords consisted of: Kawa model, stress, anxiety, goal-setting, self-efficacy, sports, physical activity, and athletes. Snowball sampling from reference lists of relevant papers identified through this search were also used in this review.

Inclusion and exclusion criteria

The identification of papers that met the inclusion criteria for this review was conducted in three phases (Fig. 1) following the guidelines of the Preferred Reporting Items for Meta-Analyses (PRISMA) and Systematic Review (Moher et al., 2015). Initially, an extensive database search yielded a total of 704 research papers. In the first phase, research papers were removed if any duplicated studies were identified, resulting in the elimination of 22 duplicated research papers from the initial pool. The second phase involved the removal of research title without include the following key words: Kawa model, stress, anxiety, goal-setting, self-efficacy, sports, physical activity. A total of 618 research papers with irrelevant title were identified and subsequently eliminated in this phase. In the third phase, the remaining full-texts research articles were examined based on the inclusion criteria: (a) use of the Kawa model; (b) research topic focused on stress, anxiety, goal-setting, self-efficacy, sports, physical activity, and athletes; and (c) research papers written in English. Following this evaluation, a total of 6 research papers met the inclusion criteria and consequently included in this review. Data extraction from the included studies were done by two independent authors.

Categorization of studies

The studies involved in this review focused on the effect of Kawa model on different psychological factors to promote sports and physical performance. Goal-setting, self-efficacy, and negative psychological factors (stress and anxiety) were identified as key psychological factors in this review.

The Kawa model and psychological factors relevant to sports performance

Goal-setting

Goal-setting is an important process in sports performance which can assist athlete improvement and development (Healy et al., 2018). Based on the finding from Pang (2016) showed that Kawa model was able to help individual in exploring the purpose of physical activity in their lives. The Kawa model has been used as a reflective tool in viewing inner strengths and establishing goals to aid future growth (Tripathi and Middleton 2018, as cited in Blakely et al. 2021). Dellow and Skeels (2016) also reported that Kawa model was able to improve self-understanding of individuals' difficulties and setting goals in life. All of these findings were consistent with other studies (Weis et al., 2019; Ober et al., 2022; Lioyd et al., 2020). Goal could be a purpose and motivation to support athletes and individuals keep moving forward in their sport performance (Piermatteo et al., 2018). Thus, these indicate that Kawa model was able to assist individuals in exploring goal in life to enhance individuals' sports and exercise performance.

Negative psychological factors (stress and anxiety)

Stress is a psychological factor that can have dual positive and negative effects (Shahsavarani et al., 2015). Positive stress is important for athletes to motivate them move forward and adapt to the surrounding environment (Shahsavarani et al., 2015). However, the athletes might be vulnerable to negative stress most of the time which can affect their performance during the daily practice and competition (Chyi et al., 2018). Besides, anxiety may occur if stress is not properly treated (Shahsavarani et al., 2015). Therefore, a lot of psychologist and coaches use different methods to help athletes get out of negative situation. The Kawa model was found to be an effective method in supporting coping through stressful situations. Based on the findings of Lape and Scaife (2017), Kawa model was used as a tool during staff teambuilding and it was found to be effective in addressing stress and burnout. Newbury and Lape (2021) also claimed that Kawa model was effective in improving individuals' anxiety and stress level simultaneously. This result also supported the finding of Brown et al. (2021) in

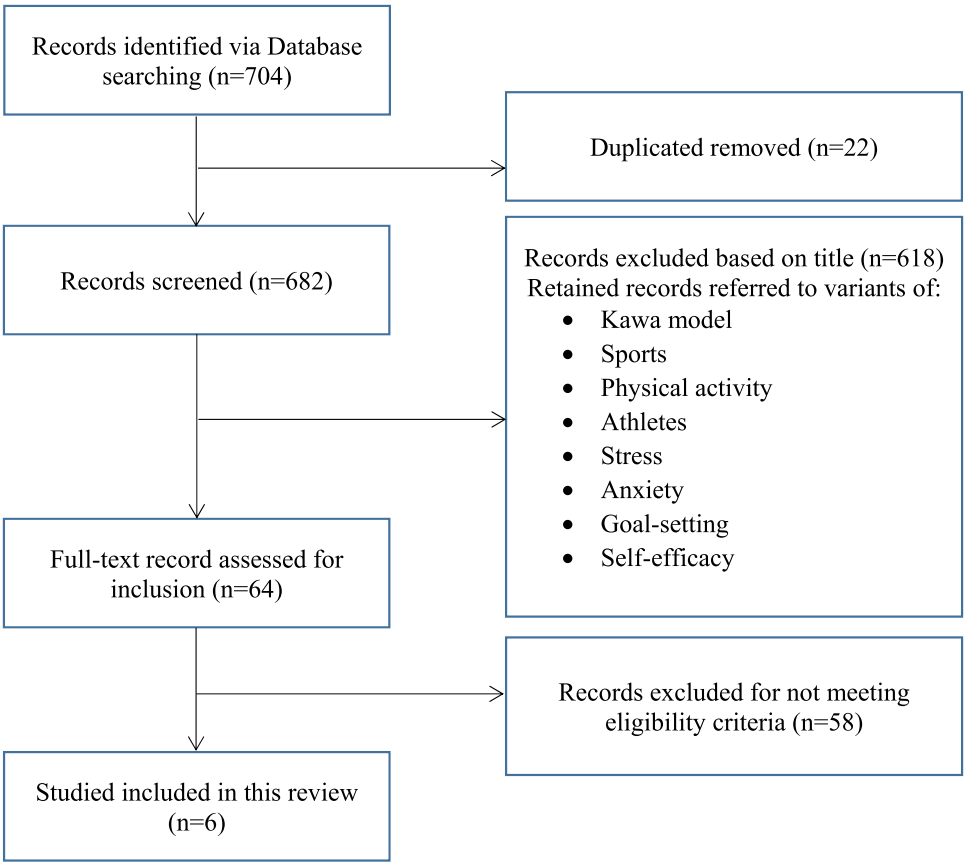

Fig. 1. Process flow diagram from identification to inclusion of studies.

which Kawa model was able to help individuals in anxiety control. These findings indicate the effectiveness of the Kawa model in enhancing mental health ability.

Self-efficacy

Another important psychological factor that can also critically affect athletes' performance is self-efficacy. Self-efficacy is the belief in one's ability to perform and achieve definite goal successfully (Sivrikaya, 2019). Without self-efficacy, athletes give up easily during competition and daily practice (Sivrikaya, 2019). Self-efficacy can be used as a predictor for athlete performance. Research from Erics (2018), showed that there is a positive relationship between self-efficacy and athletes' performance. This means that coaches can predict athletes' performance through measuring their self-efficacy level. On the other hand, coaches and sports psychologists can also enhance athletes' self-efficacy level to increase their sport performance. According to Ashby et al. (2017), the Kawa model effectively enhanced individuals' self-efficacy by illustrating the difficulties that restricted individual in lives. This can assist individuals to develop action plans to cope with their issues and gain the confidence to reengage in lives. This result is similar to the outcomes identified through the study of Kurakazu et al. (2022) in which Kawa model as a reflective tool was able to assist individuals to identify their goals and regain back confidence. Although higher self-efficacy can lead to high sports performance for athletes, over self-efficacy level might lead to poor performance (Weinberg & Gould, 2007), as athletes with over self-efficacy have been found to reduce effort in practice (Feltz & Wood, 2009). Through literature screening, six articles relating to Kawa model in different psychological factors to promote sports and physical performance (all studies summarised in Table 1).

Results

A summary of the research articles included in this review is provided in Table 2. The studies encompassed a total of 53 participants, comprising 8 were male (15.1%), 19 were female (35.8%), and 26 individuals were not identified (49.1%). The mean age of participants ranged from 60 to 79 years and the sample size varied from 1 to 32. The study population consisted 26 employees, 11 parents, 8 students, 7 unemployed individuals and 1 other were included. Among the 6 studies reviewed, 2 study investigations focused only on positive mental health (goal-setting) while 2 study solely investigated the effects of Kawa model in negative mental health (stress and anxiety). The remaining 2 studies were conducted in investigating the effects of Kawa model on both negative and positive mental health (stress, anxiety, goal-setting and self-efficacy). All of the research studies included in this review were published through the duration of 2017 to 2022. According to the findings from these 6 research studies, Kawa model has consistently demonstrated its effectiveness in exploring goal, coping stress and anxiety and regaining self-efficacy.

Discussion

This review illustrates how the Kawa model can play a key role in enhancing mental health ability. Based on the literature, the Kawa model has been reported to effectively enhance anxiety (Newbury & Lape, 2021; Brown et al., 2021), stress (Lape & Scaife, 2017; Newbury & Lape, 2021), self-efficacy (Kurakazu et al., 2022; Ashby et al., 2017) and life goal exploration (Tripathi & Middleton, 2018; Blakely et al., 2021; Dellow & Skeels, 2016; Weis et al., 2019; Ober et al., 2022; Lioyd et al., 2020). One key factor contributing to the Kawa model's effectiveness in improving mental health ability is its ability to provide individuals with insight of their perspectives and situations (Fieldhouse, 2008; Leadley,

Table 1
Summary of included studies relating to Kawa model in different psychological factors in order to promote sports and physical performance.

Study	Psychological factor	Participants	Instrumentation/ procedure	Main findings
Ober et al. (2022)	Goal setting	–	This study is a scoping review which collected, appraise, organize and synthesis all of the current research evidence regarding the use of Kawa model	Exploring the effectiveness in different ways; OT practice, Mental health settings, other Practice settings, Conjunction with other tools, Qualitative research investigations, Therapeutic tool in different contexts, Value of metaphor, Holistic self-examination
			Stage 1: identifying the research question Stage 2: Identifying relevant research Stage 3: Research selection Stage 4: Charting the data Stage 5: Collect, summarize and report results	OT practice resulted Kawa model facilitate understanding, create goal to address well-being and health, develop intervention, outcome measurement. Mental health setting resulted participants gain insight of their situation and create self-awareness Other practice setting resulted Kawa model is a less time-consuming model in collecting information and data Conjunction with other tools resulted Kawa model will be more effective in qualitative outcome measuring if conjunctly used with other quantitative measurements in psychological well-being In qualitative research investigation, Kawa model used as a data and information collection guidance As a therapeutic tool in various contexts, Kawa model can also enhance team collaboration by improving the understanding of each team members' perspective. In value of metaphor, it enhances participants' self-understanding of their situation and life goals. In holistic self-examination, the use of metaphor in Kawa model also promoted self-understanding of their situation
Blakely et al. (2021)	Goal setting	8 students from occupational therapist fieldwork	Recorded 5 to 10 min video regarding self-reflection of Kawa model drawing during week 1, week 6 and the end of the fieldwork. Semi-structured interview with participants during the end of the fieldwork experience. The interview will be around 15 min with open-ended questions regarding the impression of the use of Kawa model as self-reflection.	Examined the usefulness of Kawa model in self-reflecting Result identified Kawa model as a useful self-reflection tool Ongoing self-reflection on experience is a key to set goal, reflex progress and make changes on next experience
Weis et al. (2019)	Goal setting and stress	11 parents with 46 year old or above who have lost their child with drug overdose	1 h Semi-structured interview with participants. During the interview, participants were requested to draw their own Kawa River and open-ended question was asked to explore participants' drawing and clarify their experiences.	Kawa model provide the participants insight of their situation, inner strengths, liabilities and express their inner feelings about their lives experience of loss. Through this self-reflection, participants can identify their meaningful goal to address those difficulties.
Lape and Scaife (2017)	Negative psychological factors (stress and anxiety)	26 participants with full-time employee	Staff will be educated 1 to 1.5 h training regarding the components and used in practice of Kawa model during monthly staff meeting. All participants will be requested to create their own Kawa River model after the training Group discussion will be facilitated to focus on the perceptions of Kawa model, use as a teambuilding tool and utility to others with guiding questions.	The use of Kawa model facilitates the participants feel comfortable in sharing personal information such as, cultures, goals, difficulties and past experiences. Kawa model supported staff teambuilding, collaboration and enhance burnout and stress level. Kawa model enhanced recognition between each other's' strength and weakness. Due to the sharing and recognition of each other, conflicts and challenges from workplace was reduced.
Newbury and Lape (2021)	Negative psychological factors (stress and anxiety)	7 participants with 65 years old or older.	A pretest-posttest mixed method was used on this research First session- all the participants completed psychological general well-being, author generated survey and participate the Kawa drawing activity Second session- Participants will participate in one-on-one discussion with author regarding detail of	Kawa model effectively enhance psychological well-being such as, anxiety, depressed positive well-being, self-control, and general health and vitality. Kawa model also promoted communication and understanding of client perceptions

(*continued on next page*)

Table 1 (*continued*)

Study	Psychological factor	Participants	Instrumentation/ procedure	Main findings
			drawing and action plan will be created during this session Third session- the psychological general well-being, author generated survey and Kawa drawing activity will be re-administered	
Kurakazu et al. (2022)	Self-efficacy, stress and goal-setting	1 60 year old participant with burn injury	Semi-structured interviews to collect information and discuss about past, present and future by using Kawa River model	Kawa model help individuals to cope with his injury stress, create goal and regain confidence in life.

Table 2
Summary of systematic review.

Sample size (n)		Gender (n)	
<15	3	Male only	1
16–50	2	Female only	–
51–100	–	Male and female	3
101–200	–	Not identified	2
201–400	–		
401–500	–	Type of mental health (n)	
Not specified	1	Positive mental health only	2
		Negative mental health only	2
Age (Mean)(n)		Combination	2
<18	–	Not identified	–
19–25	–		
26–35	–	Design (n)	
36–45	–	Qualitative	1
>46	3	Interview	3
Not specified	3	Focus group	1
		Mixed-method	1
Participant (n)		Quantitative	–
Student	1	Correlation	–
Parent	1	Experimental	–
Employment	1	Questionnaire development and validation	–
Unemployment	1		
Other	2		

Number of studies reviewed = 6, papers ranged from 2017 to 2022.

2015; Richardson et al, 2010) such as strengths, weaknesses, goal, barriers, experiences and personal characteristics (Ober et al., 2022). This enhances self-awareness of individuals' abilities to face and solve difficulties.

Furthermore, mental and physical heath are interconnected through which mental health well-being can impact the quality of individuals' performance in their lives (Kuan, 2020). Several research studies have shown that mental health abilities have significant relevance to sports and exercise performance (Elmagd, 2019; Bali, 2015; Khan et al., 2016; Vysochina & Vorobiova, 2019). These studies claim that increase in mental health training can promote improvement in sports and exercise performance. This has implications for the Kawa model's utility in improving individuals' exercise and sports performance through promoting their mental health ability.

In addition to its use as an intervention to improve mental health ability which can be applied to sports performance, the Kawa model can also be used as a subjective assessment tool for coaches and sports psychologists to assess and understand athletes' information and life contexts (Weis et al., 2019; Lim, 2018; Ober et al., 2022). This could assist coaches and sports psychologists with intervention planning to overcome athletes' difficulties (Weis et al., 2019; Ober et al., 2022). Furthermore, coaches and sports psychologists can also establish a rapport and relationship with the athletes through the Kawa model assessment process which has the potential to facilitate athlete-sports psychologist collaboration and enable a degree of expression (Janus, 2017; Ober et al., 2022).

Moreover, the Kawa model has the potential to be an accessible method to enhance understanding of mental health practice compared to other methods. This is because the Kawa model utilises a metaphorical approach to facilitate problem-solving (Iwama, 2006). Instead of asking individuals to face with their difficulties directly, describing life challenges in a form of metaphors will be easier for individuals to comprehend and accept (Newbury & Lape, 2021; Lim, 2018).

Although the Kawa model was highly effective in enhancing mental health ability, rapport building and easier to practice, however, therapists and psychologists have yet to use this model in sports and exercise performance. From the previous studies, only one study used Kawa model to explore the meaning of physical activity to individuals (Pang, 2016). Therefore, this becomes the limitation on this research, which limited researches regarding the effects and relationship of Kawa model on exercise and sports performance has been reviewed in this research. Simultaneously, this also allows significant scope for sports psychologists and researchers to expand upon in the future as the Kawa model appears to be able to address many of the psychological challenges encountered by athletes (Chang et al., 2020), and has potential to provide advantages towards supporting sports performance.

Conclusion

This review paper proposed the Kawa model as a new methodology that can promote mental health ability to enhance sports performance. Through the papers examined in this review, we conclude that the use of the Kawa model can promote goal-setting, self-efficacy, stress and anxiety control and in turn, has the potential to improve sports and exercise performance. Furthermore, the use of metaphor to connect with individuals' lives can effectively increase individuals' self-awareness and comprehension of their personal situations and difficulties. While existing research examining the use of the Kawa model in sports and exercise performance setting is limited, this also presents promising opportunities to further explore the usage of Kawa model in developing sports and exercise performance in future of studies.

Ethics approval and consent to participate

The literature review was conducted according to the guidelines of the Declaration of Helsinki. The ethical approval was granted by the Universiti Sains Malaysia's Human Research Ethics Committee (USM/JEPeM/21050370).

Subject informed consent for publication

Not applicable.

Availability of data and materials

The dataset developed and analysed during the current review is available from the corresponding author on request.

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CRediT authorship contribution statement

Kai Shian Foo: Conceptualization, Data curation, Resources, Formal analysis, Writing – review & editing. **Yee Cheng Kueh:** Conceptualization, Data curation, Resources, Formal analysis, Writing – review & editing. **Kuan Juen Leong:** Writing – review & editing. **Jou Yin Teoh:** Writing – review & editing. **Hua Ann Mok:** Writing – review & editing. **Youngho Kim:** Writing – review & editing. **Garry Kuan:** Conceptualization, Data curation, Resources, Formal analysis, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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