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Competitive Swimming Training on Risk Management and Water Competency Among Swimming Students in A Sports University in Wuhan, China

A Dissertation Proposal Presented to the Faculty of the Graduate School EMILIO AGUINALDO COLLEGE Manila, Philippines
In Partial Fulfillment of the Requirements for the Degree DOCTOR OF PHILOSOPHY IN EDUCATIONAL MANAGEMENT Major in Physical Education

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Abstract:

Competitive swimming is a sportthat demands not only physical endurance and technique but also a heig htened awareness of risk management and water competency. These aspects are crucial for athletes t o perform optimally while ensuring their safety in high - stress aquatic environments. The intensity of tr aining in competitive swimming fosters both skill development and safety measures, which are essential for athletes to navigate water-related risks effectively.

Water competency refers to an individual's ability to perform essential survival skills in water, inclu ding floating, swimming, and responding to unexpected water hazards. According to Liang (2021), water competency is not only about swimming technique but also about understanding the risks associat ed with different aquatic environments. Competitive swimming training, through repeated exposur e to varied water conditions and simulated challenges, enhances athletes' ability to manage these ris ks effectively. Athletes who undergo rigorous swimming drills develop a heightened awareness of water hazards, which in turn improves their risk management capabilities.One of the fundame ntal ways competitive swimming trainingimproves risk management is by promoting situational awar eness. Huang and Gao (2022) highlight that swimmers trained to focus on their surroundings while maintaining form are better equipped to recognize potential risks, su ch as strong currents or sudden changes in water conditions. This situational awareness is critical in competitive events, where multiple athletes are in the water simultaneously, increasing the c hances of collisions or other hazards. By integrating risk management strategies into their trai ning, swimmers can mitigate these risks and maintain optimal performance.

Research has further emphasized the role of swimming coaches in enhancing athletes' risk management skills. Zhang, Chen, and Wu (2023) argue that coaches play a vital role in teaching swimmers to recognize water hazards and respond quickly. Thro ugh specific training drills, such as practicing emergency responses and rescue techniques, coaches ensure that athletes are not only proficient in competitive strokes but also in managing unexpected situations. T his holistic approach to swimming education ensures that athletes are preparedboth mentally and physically to dealwith waterrelated risks.Water competency is also closely linked to psychological preparedness. Competitive swimming requires athletes to remain calm under pressure, especially in challenging aquatic conditions. Wu (2020) found that swimmers with

higher water competency scores demonstrated greater psychological resilience during high-pressure races, as they were better able to manage their fear of drowning or injury. This psychological edge is critical in competitive environments, where mental toughness can often determine the o utcome of a race.In addition to psychological resilience, physical preparedness is crucial for managing ris ks in water. Competitive swimming training builds core strength, cardiovascular endurance, and overall fitn ess, which are essential for maintaining control in turbulent water conditions. According to Lin an d Zhan (2021), swimmers with greater physical endurance are better able to conserve energy and make strategic decisions during races, reducing the likelihood of panic or accidents in the water. These athlet es demonstrate higher water competency as they possess the physical capacity to overcome challeng es in the aquatic environment .

While the benefits of competitive swimming training are clear, there is also a need for structured risk management education in swimming programs. Research by Yang (2024) suggests that although many swimming athletes excel in water competency, not all are equally adept at-risk management. Yang recommends integrating more formalized risk assessment training into swimming programs, including lessons on recognizing environmental risks such as water pollution, temperature changes, and hazardous marine life. This would provide a comprehensive appro ach to water safety, enhancing athletes' overall risk management skills.

In terms of practical application, competitive swimming training should incorporate realworld scenarios that challenge athletes' water competency and risk management skills. Huang, Li, and Zhao (2022) conducted a study in which swimmers were exposed to simulated emergency situations, such as lifeguard rescues and underwater navigation. The athletes who participated in these exercises displayed a significant improvement in their ability to manage water-related risks during actual competitions. This suggests that practical, scenario-based training can be an effective way to enhance both water competency and risk management.

Moreover, swimming athletes benefit from continuous assessment and feedback on their risk management and water competency. Coaches who regularly evaluate athletes' performance in these areas are better able to identify weaknesses and provide targeted interventions. Zhao and Mei (2023) found that swimmers who received frequent feedback on their water competency improved their risk awareness and decision-making skills during races. This continuous cycle of assessment, feedback, and improvement is key to developing competent and risk-aware athletes.

Competitive swimming training plays a vital role in developing water competency and risk management skills among swimming athletes. Through rigorous physical training, mentalpreparedness, and specialized coaching, athletes are equipped to handle the challeng es of competitive swimming while minimizing risks in aquatic environments. As recent research high lights, integrating risk management strategies into training programs not only enhances athletes' performance but also ensures their safety. As competitive swimming continues to evolve, the importance of water competency and risk management in training progra ms will remain crucial for the development of skilled and resilient athletes.

Keywords: Swimming Training, Competitive Swimming Training

Introduction:

Competitive swimming is a sport that demands not only physical endurance and technique but also a heightened awareness of risk management and water competency. These aspects are crucial for athletes to perform optimally while ensuring their safety in high - stress aquatic environments.The intensity of training in competitive swimming fosters both skill development and safety measures, which are essential for athletes to navigate water-related risks effectively.

Water competency refers to an individual's ability to perform essential survival skills in water, including floating, swimming, and responding to unexpected water hazards.

According to Liang (2021), water competency is not only about swimming technique but also about understanding the risks associated with different aquatic environments. Competitive swimming training, through repeated exposure to varied water conditions and simulated challenges, enhances athletes' ability to manage these risks effectively. Athletes who undergo rigorous swimming drills develop a heightened awareness of water hazards, which in turn improves their risk management capabilities.

One of the fundamental ways competitive swimming training improves risk management is by promoting situational awareness. Huang and Gao (2022) highlight that swimmers trained to focus on their surroundings while maintaining form are better equipped to recognize potential risks, such as strong currents or sudden changes in water conditions. This situational awareness is critical in competitive events, where multiple athletes are in the water simultaneously, increasing the chances of collisions or other hazards. By integrating risk management strategies into their training, swimmers can mitigate these risks and maintain optimal performance.

Research has further emphasized the role of swimming coaches in enhancing athletes' risk management skills. Zhang, Chen, and Wu (2023) argue that coaches play a vital role in teaching swimmers to recognize water hazards and respond quickly. Through specific training drills, such as practicing emergency responses and rescue techniques, coaches ensure that athletes are not only proficient in competitive strokes but also in managing unexpected situations. This holistic approach to swimming education ensures that athletes are prepared both mentally and physically to deal with water-related risks.

Water competency is also closely linked to psychological preparedness. Competitive swimming requires athletes to remain calm under pressure, especially in challenging aquatic conditions. Wu (2020) found that swimmers with higher water competency scores demonstrated greater psychological resilience during high-pressure races, as they were better able to manage their fear of drowning or injury. This psychological edge is critical in competitive environments, where mental toughness can often determine the outcome of a race.

In addition to psychological resilience, physical preparedness is crucial for managing risks in water. Competitive swimming training builds core strength, cardiovascular endurance, and overall fitness, which are essential for maintaining control in turbulent water conditions. According to Lin and Zhan (2021), swimmers with greater physical endurance are better able to conserve energy and make strategic decisions during races, reducing the likelihood of panic or accidents in the water. These athletes demonstrate higher water competency as they possess the physical capacity to overcome challenges in the aquatic environment .

While the benefits of competitive swimming training are clear, there is also a need for structured risk management education in swimming programs. Research by Yang (2024) suggests that although many swimming athletes excel in water competency, not all are equally adept at risk management. Yang recommends integrating more formalized risk assessment training into swimming programs, including lessons on recognizing environmental risks such as water pollution, temperature changes, and hazardous marine life. This would provide a comprehensive approach to water safety, enhancing athletes' overall risk management skills.

In terms of practical application, competitive swimming training should incorporate real-world scenarios that challenge athletes' water competency and risk management skills. Huang, Li, and Zhao (2022) conducted a study in which swimmers were exposed to simulated emergency situations, such as lifeguard rescues and underwater navigation. The athletes who participated in these exercises displayed a significant improvement in their ability to manage water-related risks during actual competitions. This suggests that practical, scenario-based training can be an effective way to enhance both water competency and risk management.

Moreover, swimming athletes benefit from continuous assessment and feedback on their risk management and water competency. Coaches who regularly evaluate athletes' performance in these areas are better able to identify weaknesses and provide targeted

interventions. Zhao and Mei (2023) found that swimmers who received frequent feedback on their water competency improved their risk awareness and decision-making skills during races. This continuous cycle of assessment, feedback, and improvement is key to developing competent and risk-aware athletes.

Competitive swimming training plays a vital role in developing water competency and risk management skills among swimming athletes. Through rigorous physical training, mental preparedness, and specialized coaching, athletes are equipped to handle the challenges of competitive swimming while minimizing risks in aquatic environments. As recent research highlights, integrating risk management strategies into training programs not only enhances athletes' performance but also ensures their safety. As competitive swimming continues to evolve, the importance of water competency and risk management in training programs will remain crucial for the development of skilled and resilient athletes.

Background of the Study:

Competitive swimming is a high-intensity sport that requires not only physical prowess but also strong risk management skills and water competency. The combination of these two elements is critical for the safety and performance of athletes in water-based sports. Risk management refers to the ability to identify, assess, and mitigate risks during training and competitions, while water competency encompasses a swimmer's skill, knowledge, and confidence in handling various aquatic environments. Together, these components play a pivotal role in ensuring the effectiveness and safety of competitive swimming training (Li, 2023) .

Water competency is a key element that underpins the performance and safety of competitive swimmers. Studies have shown that athletes with higher levels of water competency tend to exhibit better swimming techniques, greater efficiency, and reduced risk of accidents or injuries (Chen & Ong, 2023) . Water competency is not limited to the ability to swim; it also involves a comprehensive understanding of water environments and the ability to perform in both calm and turbulent water conditions (Chou & Teo, 2021) .

Risk management in competitive swimming is an essential area of focus for coaches and athletes alike . It involves preparing athletes to handle emergencies, such as sudden exhaustion or unexpected water conditions, through proper training and situational awareness (Gan & Wong, 2022) . Effective risk management in swimming training has been linked to enhanced decision-making skills and quicker response times during competitions, which can prevent accidents and improve performance.

The relationship between competitive swimming training and risk management has been extensively studied. Research by Tan and He (2023) highlighted that swimmers who underwent structured risk management training were better equipped to handle challenging situations in the water, such as strong currents or equipment malfunctions. This suggests that integrating risk management strategies into regular training can enhance water competency and safety during competitive events.

A comprehensive understanding of water competency requires an analysis of both physical and psychological preparedness. Swimmers must not only be physically fit but also mentally resilient to handle high-pressure situations in competitive environments (Xie & Fang, 2023) . Psychological resilience allows athletes to maintain composure during emergencies, thereby minimizing the risk of accidents. Research has shown that swimmers who are trained in both physical skills and psychological resilience are more likely to achieve higher water competency (Lee, 2022) .

The role of coaches in developing water competency and risk management skills is crucial. Effective coaching strategies that focus on building situational awareness, fostering mental toughness, and teaching emergency response techniques have been found to significantly improve a swimmer's performance and safety in the water (Nguyen & Vu, 2021) . These coaching interventions provide athletes with the skills they need to anticipate and respond to potential risks.

Simulated emergency scenarios are often used in swimming training to enhance water competency and risk management abilities. A study by Suri and Rahman (2022) demonstrated that swimmers who regularly participated in

simulated emergency drills showed marked improvements in their ability to manage risks and make quick, informed decisions during real-life situations. These simulations are invaluable for preparing athletes for unexpected events during competitions.

Furthermore, the intensity and frequency of training also influence the development of water competency. Intensive training that incorporates both endurance and strength conditioning has been shown to improve a swimmer's ability to handle high-stress situations in the water (Wang & Tan, 2021) . Consistent exposure to rigorous training environments can build both physical stamina and mental preparedness, which are essential components of risk management in competitive swimming.

In recent years, technological advancements have been introduced to aid in the development of water competency and risk management. Wearable devices and real-time monitoring tools provide swimmers and coaches with data on performance metrics, enabling them to make adjustments to training programs and identify potential areas of improvement (Lu, 2023) . The integration of technology into training allows for more precise measurements of water competency and the effectiveness of risk management strategies.

Incorporating both physical and cognitive aspects of risk management training has been found to yield better results. Xu and Zeng (2023) examined the impact of cognitive training exercises, such as visualization and mental rehearsals, on swimmers' ability to manage risks. They found that cognitive training, when combined with physical drills, significantly enhanced a swimmer's ability to anticipate risks and respond effectively during competitions.

The development of water competency is a gradual process that requires a long-term approach. Chen, Yee, and Wang (2022) pointed out that swimmers who undergo consistent, high-quality training over extended periods tend to demonstrate greater water competency and risk management skills compared to those who receive sporadic training. This highlights the importance of long-term athlete development programs that focus on both physical and cognitive aspects of swimming.

Moreover, risk management and water competency training need to be tailored to individual athletes. Personalized training programs that consider the swimmer's experience level, physical capabilities, and psychological resilience can lead to more effective outcomes (Fang & Le, 2023) . Customizing training ensures that athletes receive the necessary support to improve both their technical skills and their ability to manage risks in the water.

The role of early training exposure in developing water competency is also significant . Athletes who begin swimming training at a younger age tend to develop better water competency and risk management skills (Liu & Gao, 2022) . Early exposure to water environments allows athletes to build confidence, learn essential swimming techniques, and develop the necessary mental and physical resilience to handle competitive swimming challenges.

Finally, the integration of mindfulness techniques into swimming training has gained attention in recent years. Huang and Lim (2023) found that swimmers who practiced mindfulness during training exhibited better focus, enhanced water competency, and improved risk management abilities. These findings suggest that combining traditional training methods with mindfulness practices can lead to a more holistic approach to developing competent and resilient swimmers.

Competitive swimming training plays a vital role in the development of water competency and risk management skills among athletes. By incorporating both physical and cognitive training elements, as well as leveraging technological advancements and mindfulness techniques, coaches can ensure that swimmers are well - prepared to face the challenges of competitive environments. Further research into personalized training approaches and the long - term effects of early exposure to swimming training will provide deeper insights into how to optimize water competency and risk management.

Swimming and Risk Management:

Traditionally, attempts to prevent drowning through water safety education have centered on teaching swimming techniques.

The basic premise of the 'swim and survive' strategy is that swimming ability corresponds to aquatic safety. However, this is not always correct, as there is no globally accepted criterion of swimming skill for drowning prevention. The lack of a defined standard has caused uncertainty regarding the exact abilities required for safety and the requisite degree of competency.

More recently, personal water competency has been recognized as an important element in drowning prevention, particularly in open water contexts (ILSF, 2022; Brenner et al. , 2021 ; Bierens, 2021) . Moran (2023) defined water competence as "the sum of all personal aquatic movements that help prevent drowning, as well as the associated water safety knowledge, attitudes, and behaviors that facilitate safety in, on, and around water" (p. 4) . This comprehensive definition encompasses not only swimming ability but also survival skills such as floating, direction, submersion, safe entry and departure from the water, and rescue tactics, as well as information and critical thinking to enhance water safety. Stallman, Moran, Langendorfer, and Quan (2022) identified 15 water competences based on studies that support drowning prevention .

These competences are adaptable to a variety of activities and situations, and each is supported by published data. Competencies 1 -10 are categorized as practical or psychomotor skills, competencies 11 -14 are cognitive, and competency 15 is emotional.

Together, they correspond to Newell's (2021) constraints model, which investigates the interplay of the individual, task, and environment. Stallman and colleagues (2022) pushed for a broader approach to water competency that includes not only actual swimming abilities but also water safety information and critical thinking. These abilities also stress the importance of adapting skills to different contexts and knowing risk factors.

Recent research on swimming competency has highlighted questions concerning not just the definition of swimming proficiency, but also the variations between real and perceived skills (Laakso & Stallman, 2021 ; Moran et al. , 2022; Petrass et al. , 2022; Stallman et al. , 2020) . Anecdotal data suggests that many victims of open water drownings, who are frequently considered as strong swimmers, yet die in accidents. Rescue shows, like as Piha Rescue in New Zealand and Bondi Rescue in Australia, typically include people who identify as skilled swimmers. Given that many drownings prevention initiatives stress developing practical swimming skills, particularly in youngsters, the essential issue remains: what level of proficiency is required for successful drowning prevention?

The causes for the disparity between what people imagine they can achieve in the water and what they can really do are unclear. One cause is the lack of a standardized worldwide assessment of swimming ability, which might lead to overconfidence in one's skills

(Dixon & Bixler, 2022) . Furthermore, uncertainty about the concept of swimming proficiency may exacerbate the problem, particularly if swimming competency is primarily defined by the distance one can swim. Another aspect complicating matters is the period since swimming abilities were last examined. Many individuals learn swimming and water safety skills at school, reaching specific distances and competences at that time. However, without constant practice, these talents may deteriorate, even if people feel they can perform at the same level. The more regularly and lately a person participates in swimming or aquatic sports, the more likely their perceived abilities will match their actual talents.

The 'Can You Swim' international research (Moran et al. , 2022; Petrass & Blitvich, 2024; Petrass et al. , 2022; Queiroga et al. , 2023; Costa et al. , 2020) investigates what children and young people believe they can do in regulated aquatic environments such as pools. However, this research should be expanded to "open" or natural water settings, with an emphasis on high-risk groups such as adult men and certain minority communities. Despite the high incidence of drowning among adults (WSNZ, 2022), the majority of the material focuses on children and teens. There is little study on adult water competence. Adult studies, such as perceptions from parents of young children (Stanley & Moran, 2022), high-risk ethnic minority groups (Stanley & Moran, 2023), and elderly persons (Stanley &

Moran, 2021), have found that these groups overestimate their water competence.

Adults had relatively modest levels of swimming and floating ability. The vast majority (94%) could not swim more than 100 meters in five minutes, and 60% couldn't float for more than a minute in the pool. Although many participants found swimming 25 meters simpler than expected, nearly a quarter (24%) required more than a minute to complete the distance at maximum speed —a skill that might be important in scenarios like as fleeing a sinking boat or rip current. This performance falls short of the American Red Cross guidelines for "water competency," which call for a one-minute float and 25 meters of propulsion on either the front or back (Quan et al. , 2020) . These fundamental skills may not be applicable to other water-related jobs or environmental circumstances. Given the reported low swimming and floating abilities, individuals may be underprepared for survival in high-risk open water settings, such as floating while waiting for aid or swimming to a safe escape.

Recent research of 194 Māori and Pasifika people (Stanley & Moran, 2023) found a relationship between poorer socio-economic status and worse swimming ability. These populations frequently lack access to formal swimming instruction and are less interested in water sports or recreation, which may explain their high prevalence in drowning figures in New Zealand.

Despite their poor swimming proficiency, 63% of individuals thought they were good swimmers following the tests, indicating a mismatch between their perceived and real abilities. Furthermore, post-activity data revealed that more participants believed they could swim farther than they had previously assumed, with several indicating they could swim over 200 meters —despite the fact that none of them did so during the five-minute trial. Men were more prone than women to overestimate their swimming ability both before and after the exercise, with more men believing they could swim longer distances. Previous research on adult views, including parents with small children (Stanley & Moran, 2022), ethnic minority groups (Stanley & Moran, 2023), and elderly persons (Stanley & Moran, 2021), found similar tendency to overestimate water competence. This disparity between perceived and real ability is significant for drowning prevention and may contribute to greater drowning rates in some demographic groups.

Floating was one area where participants believed they improved after the exercise, with 62% feeling they could float for more than five minutes despite the fact that 98% were unable to do so during the test.

The capacity to safely enter and depart water is critical for drowning prevention. In this study, 78% of individuals could enter the water with high or outstanding form, however majority of the lower ratings were due to dangerous entrance tactics rather than incapacity. Worryingly, 16% of participants were unable to depart the water entirely, a finding comparable to recent research in which one - quarter of teenagers were unable to exit a pool's deep end (Moran, 2024b) .

Moreover half of the participants anticipated to enter and escape the water with little difficulty, yet one-sixth struggled to do so, demonstrating a difference between perceived and real ability. Women had an almost threefold lower success rate than males in exiting the water. Moran (20 24b) discovered that the capacity to depart the water does not necessarily correspond with swimming or floating skills, since people who can exit successfully may still lack competence in swimming or floating. Factors such as lower upper body strength compared to weight may affect one's ability to escape the water.

Men tend to overestimate their swimming abilities (Moran, 2024 , 2020; Stanley & Moran, 2022 , 2023) and underestimate risks (Gulliver & Begg, 2020; Moran, 2021 ; Smith & Brenner, 2020), contributing to their overrepresentation in drowning statistics. These findings indicate that drowning may be connected not just to male overconfidence, but also to a misjudgment of their own aquatic competency.

Almost all individuals displayed extremely poor levels of water competence, notably in floating, swimming, and exiting skills. The performance levels seen in this study were lower than those found in previous adult studies and fell short of the norms suggested for children at the conclusion of elementary school (Royal Life Saving Society Australia, 2020; Water Safety New Zealand, 2020b) . As a result, these adults are unlikely to be adequately protected from drowning, particularly in open water

circumstances Despite their limited actual swimming skills, the majority of individuals considered themselves proficient swimmers, and many reported even greater levels of perceived competence after the testing. This demonstrates a large disparity between their perceived competency and the real abilities required to maintain aquatic safety.

Water Competency among Athletes

Physical activity refers to any action of skeletal muscles that needs energy expenditure (Bull et al. , 2020; Kristiyanto et al. , 2020) . This wide definition encompasses a variety of activities, including active play, active transportation (walking or bicycling), physical education, sports, and other deliberate workouts (Woods et al. , 2023; Nasrulloh et al. , 2022) . For children and adolescents, engaging in physical activity offers numerous health benefits, including improved physical fitness (cardiorespiratory and muscular), enhanced cardiometabolic health (regulating blood pressure, dyslipidemia, glucose levels, and insulin resistance), better bone health, cognitive improvements (academic performance, executive function), mental health benefits (reduction of depression symptoms), and decreased adiposity.

Swimming is one of the most popular extracurricular physical activities in Australia (Australian Sports Commission, 2023), England (Pontefract, 2023), the United States (Wallace et al. , 2022) and Indonesia. Swimming was formerly described as the act of moving through water, first for survival and then as a competitive activity (Escalante & Saavedra, 2022) . It entails continuously moving the arms and legs through the water to cover precise distances (Eskiyecek, 2020) . Swimming skills are essential for survival in aquatic emergency circumstances (Pilgaard et al. , 2020) .

Swimming has a variety of health advantages, including better cardiorespiratory fitness and body composition (Oja et al. , 2015; Derwin King Chung Chan et al. , 2020) and increased muscular strength (Salafi et al. , 2022) . Swimming, however, is associated with an increased risk of drowning (Wolf et al. , 2024) . Drowning happens when a person has difficulty breathing as a result of submersion or immersion in water (van Beeck et al. , 2020) .

The drowning process begins with difficulty breathing because the airway is buried or partially obstructed by water (Szpilman et al. , 2022) . Drownings can be lethal or non-fatal (Listyarini et al. , 2021) .

Drowning, along with road traffic collisions and falls, is a prominent cause of accidental fatalities (Sukendro et al. , 2021) . Major risk factors include a lack of barriers and supervision for youngsters, insufficient swimming skills, low knowledge of water hazards, alcohol use, dangerous water transportation, and flood-related disasters (Ilham et al. , 2021) .

Drowning is a serious public health issue that is often underestimated (van Beeck et al. , 2020) . Drowning killed an estimated 236,000 people globally in 2019 (Sutapa et al. , 2021), underscoring its importance as a global public health concern (Saifu et al. , 2021) . Over 90% of unintentional drowning deaths occur in low- and middle-income nations, with the Western Pacific and Southeast Asia areas accounting for more than half of all drowning incidents worldwide (Nopembri et al. , 2022) .

Among children and adolescents, drowning is the greatest cause of mortality. Children aged 1 -4 years are the most likely to drown, followed by those aged 5 -9 years (Hastuti, 2021) . Drowning fatality rates in Southeast Asia are much higher than the global norm for all age categories (Hardianto et al. , 2022) . Figure 1 shows that drowning is the second leading cause of death in the 10 -14 age group, third in the 5 -9 age group, sixth in the 15 -24 age group, and seventh in the under-5 age group.

According to research, drowning occurs at an alarmingly high rate. In Purworejo, drowning is the second highest cause of mortality after transportation-related injuries. Between 2014 and 2018, national SAR activities engaged 31,390 people in drowning accidents, with 90% survivors, 4.7% fatalities, and 5.4% missing people. According to data from the sample registration system in 2014, unintentional drowning was the main cause of death among Indonesia's younger demographics. It is the fifth leading cause of mortality for children aged 1 -4 years and third for children aged 5 -14 years (Pratama et al. , 2022) .Developing proper water competency is critical for youngsters (D'Hondt et al. , 2021) . Children should be given

opportunity to acquire and perfect aquatic abilities from a young age, with an emphasis on survival tactics (Utami et al. , 2023) . Mastery of water skills, including physical, cognitive, and emotional abilities, is critical for improving water safety and reducing drowning in children (Stallman et al. , 2022; Taylor et al. , 2020) .

School-based initiatives are critical in developing a firm basis for water safety (Wilks et al. , 2022)

Schools are educational institutions that provide learning spaces and settings under teacher supervision (Boruah, 2020) . They provide students with information, abilities, and attitudes that are consistent with educational goals through three curricular avenues: intracurricular, co - curricular, and extracurricular activities (Turkkahraman, 2020) .

The major goal of drowning prevention is to reduce exposure risks by educating the public about drowning dangers (Katchmarchi et al. , 2022) . Reducing drowning-related fatalities helps to decrease premature mortality rates (Willcox-Pigeon et al. , 2020) . Implementing six interventions, including teaching swimming skills and water safety, as well as four cross-sectoral methods, can effectively prevent drowning (Adji et al. , 2022) .

Breathing regulation is critical for learning to swim and is one of the aquatic abilities required to prevent drowning (Nugroho et al. , 2021) . It is recognized as a basic survival skill and a precondition for further education (Nasrulloh et al. , 2020) . Furthermore, respiratory control is usually emphasized in each swimming lesson (Kogoya et al. , 2023) .

According to research, a child's capacity to swim 25 meters continuously does not ensure competence in other important tasks such as swimming on their back, turning, rolling over, resting, or diving (Nugroho et al. , 2022) . In an emergency, people may have to swim on their backs or stop and rest to restore their calm and catch their breath (Trisnadi et al. , 2023) . Attempting to relax or stop takes a lot more energy than swimming continuously.

Furthermore, children who can swim 10 to 15 meters easily while floating in deep water have an advantage over those who can only swim 25 meters with difficulty and cannot rest (Amran et al. , 2023) . A swimmer who has a high head posture may not have learned optimal breathing methods, but a proficient swimmer can do both well. When swimming breaststroke with the head above water, heart rate, oxygen uptake, and lactate levels rise compared to more efficient breathing patterns including face submerge (Jufrianis et al. , 2021) .

Swimming requires effective breathing. It is distinguished by: 1) Comfortable air exchange when necessary without expending excessive energy; 2) Breathing movements that are spatially and temporally coordinated, allowing inhalation and exhalation without interfering with other actions; 3) Techniques that do not jeopardize optimal body position; and 4) Approaches that cater to task requirements, individuals involved, and environmental conditions (Sutapa et al. , 2020) .

Previous reviews (Yuniana et al. , 2023) have highlighted the importance of examining the emphasis placed on effective breathing in teaching, exploring the effects of focusing on or neglecting effective breathing during instruction, considering potential stroke modifications for improved head position, and investigating the nuances of effective breathing in various environments, such as open water or while surfing. Given the mentioned difficulties, the authors feel it is vital to do study into the influence of movement alterations in training on students' swimming abilities.

Drowning and Water Competency among Athletes:

Drowning kills at least 372,000 people worldwide each year, making it the third greatest cause of unintentional death, accounting for 7% of all fatalities (WHO, 2024) . The word "drowning" refers to a complicated chain of events defined by respiratory distress caused by immersion or submersion in a liquid (Bierens, 2021) . Research on drowning has various problems, primarily due to a lack of precise global occurrence numbers. However, a thorough investigation of recorded instances aids in the identification of drowning risk factors, which is essential for establishing focused and effective preventive initiatives. Given the variety of situations that can contribute to drowning, experts recommend a multi-layered preventative strategy rather than relying on solitary treatments, as no one action

can completely prevent drowning-related deaths and injuries. Teaching swimming and water safety skills is an important preventative measure.

But what exactly does it mean to "know how to swim"? Some academics define swimming competency as the capacity to swim a certain distance, while others emphasize on the method utilized to swim that distance (Stallman, Junge, & Blixt, 2023) . It is widely acknowledged that gaining talents that minimize drowning risk may coexist with abilities that improve performance and competition. Both aquatic movement professionals and drowning prevention experts are responsible for drowning prevention, even if they are frequently ignorant of this. The subject of what should be taught to children is rarely addressed, resulting in substantial variety in instructional material that is frequently influenced by tradition and expert opinions rather than a consensus on swimming education.

The term "water competence," coined in 1995, refers to a wide variety of physical talents as well as knowledge and ideals. It has now been adapted for drowning prevention, which is described as the whole set of personal aquatic movements that contribute to drowning prevention, including the requisite water safety knowledge, attitudes, and behaviors for safety in, on, and around water. The concept of "water competence" has reignited interest in building a full set of aquatic abilities while also integrating cognitive and emotional qualities. This notion broadens the focus from just identifying swimming to a more comprehensive knowledge of abilities that might reduce drowning risk. Water competence is a more comprehensive and encompassing phrase than "swimming skill," because it includes cognitive and affective abilities, making it especially important for drowning prevention. Nonetheless, drowning and its preventionremain challenging study topics, and the idea of water competence is evolving.

Drowning's impact is amplified by the large number of young victims, many of whom had the opportunity to live long, productive lives. In 2024 , drowning-related fatalities and disabilities resulted in an estimated 1.3 million disability-adjusted life years (DALY) lost (Peden et al. 2024) . Drowning is expected to cost the US economy $5.3 billion per year.

Drowning is seen as a complicated and diverse occurrence, sometimes defined as a series of events (Bierens, 2021) . Defining drowning properly is critical for collecting trustworthy data, yet until recently, there was no universally accepted definition. However, during the inaugural World Conference on Drowning (Drowning 2002 in Amsterdam), the International Task Force on the Epidemiology of Drowning presented a definition that was rapidly embraced by the drowning prevention community and, later, the World Health Organization. Drowning is currently described as "the process of experiencing respiratory impairment from immersion or submersion in liquid" (Association for Child Safety Promotion [APSI], 2015; van Beek, Branche, Szpilman, Modell, and Bierens, 2020) .

Drowning research involves a variety of obstacles, the most significant of which is the unreliability of global occurrence data. Many incidents go undetected, particularly in low- and middle-income nations where fatalities are often not recognized or reported . Furthermore, some incidents, such as transportation accidents, suicides, killings, and natural catastrophes, are not classed as drowning by the WHO's International Classification of Diseases (ICD 10) (Szpilman et al. , 2022) . Furthermore, more than 100 nations do not match the WHO's dependability requirements, and hence are excluded from global ICD 10 statistics. As a result, the real burden of drowning is likely greatly underestimated, maybe 2 to 3 times greater than reported statistics.

Despite these obstacles, comprehensive analysis of documented occurrences can aid in identifying drowning risk factors. Notably, Eleni Petridou and Alexandra Klimentopoulou (2020) presented a paradigm that divides these risk variables into three categories: sociodemographic, environmental, and behavioral components.

A detailed investigation of the risk factors linked with drowning is required for the development of focused and effective preventative methods. Gender is a key risk factor; according to global data, males are twice as likely to drown as females. In several high-income countries (HICs), the discrepancy can be as much as tenfold, with male drowning rates substantially exceeding those of girls. According to research,

guys overestimate their talents while underestimating threats (Moran et al. , 2022) .

Another important risk factor is age, with people under the age of 25 accounting for over half of all drownings. However, this varies according on area and economic level. In some HICs, middle -aged men have the greatest drowning rate, but in many low-income countries (LICs), children aged 1 -14 are the most afflicted. For example, in Bangladesh, over half of all drownings (43%) include children aged 1 -4 years (WHO, 2024) .

Other noteworthy risk factors include insufficient supervision of young children, the lack of water barriers (especially near residences), unclean water sources, dangerous water crossings, and overcrowded and badly maintained boats, among others. These risk factors are frequently misunderstood by the general population, and understanding of the significance of water safety procedures is typically low.

Langendorfer and Bruya created the idea of water competence in 1995, emphasizing the necessity of a broad range of physical abilities as well as the requisite knowledge and values. Moran (2024) expanded on this concept for drowning prevention, defining it as "the totality of personal aquatic movements that contribute to preventing drowning, combined with the related water safety knowledge, attitudes, and behaviors that promote safety in, on, and around water. "

During the 2011 World Conference on Drowning Prevention, an International Working Group was formed to further the notion of water competency. At the WCDP 2013 in Potsdam, a workshop was held, and a preliminary report was given to the Drowning Prevention Commission, resulting in joint activities.

The concept of "water competence" has reignited interest in learning a variety of physical aquatic abilities while also including cognitive and emotional qualities. This change shifts the focus away from merely describing swimming and toward a more comprehensive knowledge of the numerous abilities that might assist lower drowning risks. The International Working Group's goal is to improve the water competency concept and encourage its spread. Their particular aims include: a) defining water competence, b) presenting research data to support each proposed skill and its protective benefit, and c) identifying topics for further study.

The project's title represents a change away from just defining swimming or swimming skills and toward deciding what should be taught and supporting proposed abilities with research findings. This strategy has not been used before, owing to the fact that relevant study evidence has just been accessible in the last 10 to 15 years. The document is titled "From Swimming Skill to Water Competence: Towards a More Inclusive Drowning Prevention Future. " Water competence encompasses a broader and more inclusive range ofconcepts than ‘swimming skill', as it integrates both cognitive and emotional competencies (Moran et al. , 2022; Stallman et al. , in Press), making it especially important for drowning prevention . Brenner, Moran, Stallman, Gilchrist, and McVan (2020 , p. 116) proposed that, while "swimming ability should be promoted as a critical aspect of water competence, it must be understood that swimming alone is often insufficient to prevent drowning. " However, as previously stated, drowning remains a complex issue for research and prevention. Water competence is a constantly expanding and developing notion (Quan et al. , 2020) .

Theoretical Framework:

Competitive swimming training and its impact on risk management and water competency among swimming athletes can be effectively examined through the lens of the Socio -Ecological Model (SEM) . The SEM provides a comprehensive framework for understanding how individual, interpersonal, organizational, community, and policy factors interact to influence behaviors and outcomes in various contexts, including sports training and competition. In the context of swimming, the SEM enables the exploration of how training practices affect not only individual athletes’ skills but also their awareness and

management of risks associated with the sport.The SEM posits that individual behavior, such as risk management and water competency, is influenced by a variety of factors at multiple levels. At the individual level, athletes' physical abilities, swimming experience, and personal motivations play crucial roles in their training outcomes. Research by Garcia and Thompson (2022) indicates that athletes with higher levels of self - efficacy are more likely to engage in proactive risk management strategies, which enhances their overall water competency during training and competition.

Interpersonal factors, such as relationships with coaches and teammates, significantly impact an athlete's development of water competency. According to Lee and Choi (2023), positive communication and support from coaches can foster an environment where athletes feel comfortable discussing their fears and uncertainties, ultimately leading to better risk management practices. This relational dynamic is critical, as athletes often rely on their peers and coaches to provide guidance on safety practices in the pool environment.

Organizational factors, including the policies and practices of swimming clubs and training programs, also contribute to risk management and water competency. Effective training programs should incorporate safety protocols and risk management strategies into their curricula. Martinez and Zhou (2021) found that swimming clubs with structured safety training sessions significantly improved their athletes' ability to identify and mitigate risks, thereby enhancing water competency. Moreover, the availability of resources, such as safety equipment and qualified instructors, further supports the implementation of effective risk management practices (Khan & Ali, 2024) .

At the community level, factors such as public access to swimming facilities and community awareness programs play a significant role in shaping swimming safety practices. Williams and Turner (2023) emphasize that community initiatives focused on educating swimmers about water safety can lead to increased awareness and improved competency, particularly among younger athletes. These community-based efforts can enhance the overall safety culture surrounding competitive swimming.

Finally, policy-level factors, including regulations and guidelines set by sports governing bodies, influence risk management in competitive swimming. Comprehensive policies that mandate safety training and risk management practices can promote a culture of safety among athletes. For instance, Evans and Patel (2020) suggest that national swimming federations should enforce regulations requiring swimming clubs to implement risk assessment protocols as part of their training programs.

In summary, the Socio-Ecological Model offers a multidimensional framework for understanding how competitive swimming training affects risk management and water competency among swimming athletes. By considering the interplay of individual, interpersonal, organizational, community, and

policy factors, this model provides valuable insights into how athletes can be better prepared to manage risks and improve their skills in the water.

Conceptual Framework:

Figure 1 shows the research paradigm on the assessing the relationship between the swimming athlete respondents' assessment of their competitive swimming training on risk management and their self-assessment of their water competency in Wuhan Sports University in Wuhan Province, China. It will likewise present the correlation between competitive swimming training on risk management and water competency among swimming athletes .

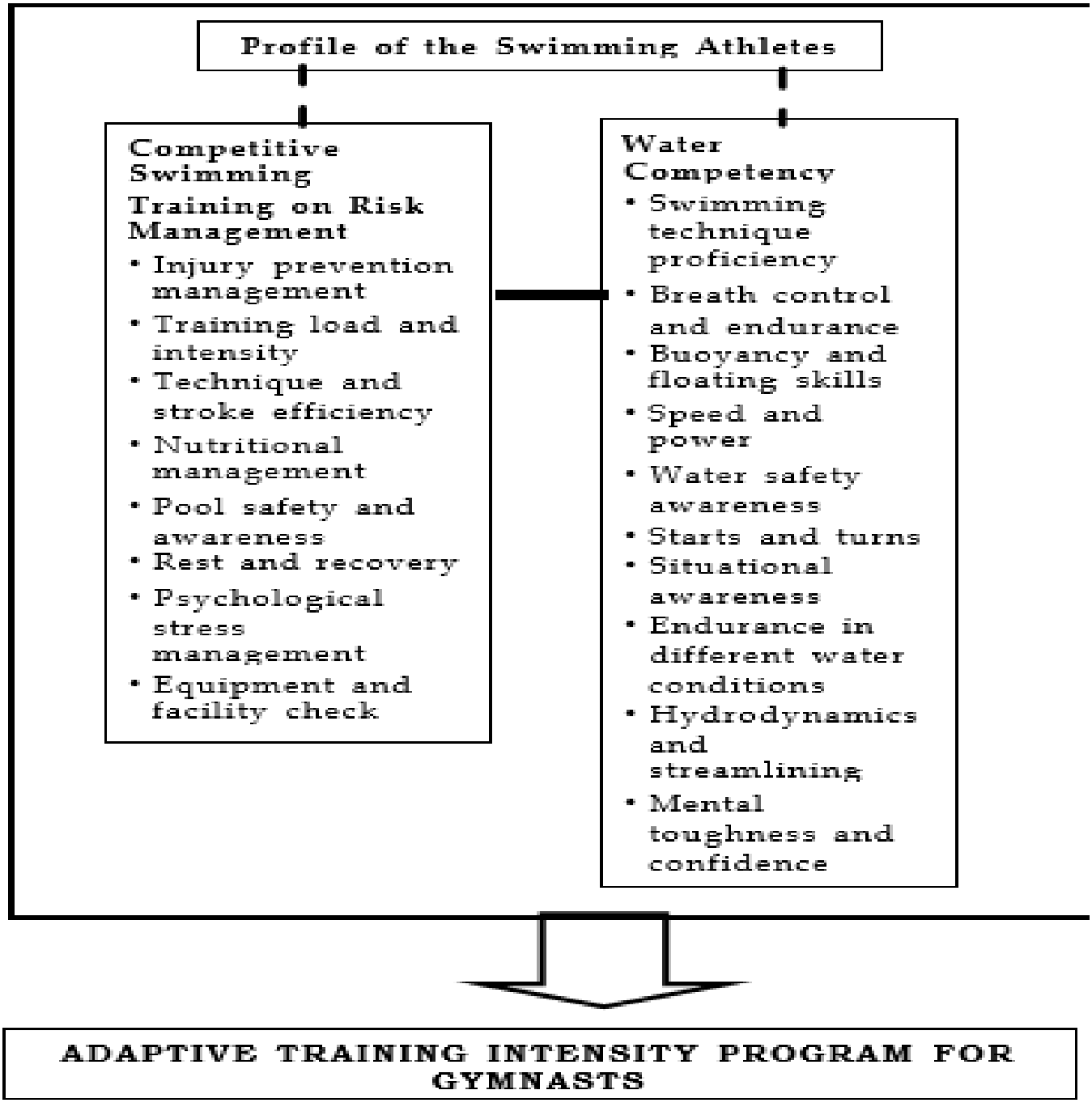

Figure 1. Research Paradigm

Figure 1 indicates the research paradigm of the study. It presents the intervening variables , specifically the swimming athletes' demographic data . It also presents the swimming athlete respondents' assessment of their competitive swimming training on risk management , and their self-assessment of their water competency.

It shows the expected output of the study, which is the risk management in competitive swimming program for swimming athletes.

Statement of the Problem:

This study will determine the relationship between competitive swimming training on risk management and water competency among swimming athletes .

The results of the study will be used as a basis for risk management in competitive swimming program for swimming athletes.

Specifically, the study will answer the following questions:

1. What is the demographic profile of the swimming athletes

respondents in terms of:

1.1. sex;

1.2. age;

1.3. year level; and

1.4. number of years as swimming athletes?

2. What is the assessment of the swimming athlete respondents of their competitive swimming training on risk management in terms of:

2.1. injury prevention management;

2.2. training load and intensity;

2.3. technique and stroke efficiency;

2.4. nutritional management;

2.5. pool safety and awareness;

2.6. rest and recovery;

2.7. psychological stress management; and

2.8. equipment and facility check?

3. Is there a significant difference in the assessment of the swimming athlete respondents of their competitive swimming training on risk management when they are grouped according to their profile?

4. What is the self-assessment of the swimming athlete

respondents of their water competency in terms of:

4.1. swimming technique proficiency;

4.2. breath control and endurance;

4.3. buoyancy and floating skills;

4.4. speed and power;

4.5. water safety awareness;

4.6. starts and turns;

4.7. situational awareness;

4.8. endurance in different water conditions;

4.9. hydrodynamics and streamlining; and

4.10. mental toughness and confidence?

5. Is there a significant difference in the self-assessment of the swimming athlete respondents of their water competency when they are grouped according to their profile?

6. Is there is significant relationship between competitive swimming training on risk management and water competency among swimming athletes?

7. Based on the results of the study, what risk management in competitive swimming program for swimming athletes can be proposed?

Hypothesis:

The following hypotheses will be tested:

1. There is no significant difference in the assessment of the swimming athlete respondents of their competitive swimming training on risk management when they are grouped according to their profile

2. There is no significant difference in the self-assessment of the swimming athlete respondents of their water competency when they are grouped according to their profile .

3. There is no significant relationship between competitive swimming training on risk management and water competency among swimming athletes .

Significance of the Study:

The outcomes of this study can be valuable for the following :

Swimming Athletes. This study will provide swimming athletes with valuable insights into how competitive swimming training enhances their water competency and risk management skills, leading to improved safety, confidence, and performance in aquatic environments.

Coaches. This study will offer coaches detailed information on how specific training approaches in competitive swimming contribute to athletes' water competency and risk management abilities, enabling them to create more effective training programs that focus on both performance and safety.

Athletic Program Heads. This study will supply Athletic Program Heads with data on the importance of integrating risk management and water competency into competitive swimming programs, supporting the development of comprehensive training systems that prioritize both skill enhancement and athlete safety.

School Administrators. This study will provide School Administrators with evidence that structured competitive swimming training programs not only boost athletic performance but also promote essential safety skills like water competency and risk management, justifying investments in swimming programs and facility improvements.

Policy Makers. This study will furnish Policy Makers with research findings that emphasize the significance of risk management and water competency in competitive swimming training. These insights can inform the development of policies and guidelines that promote safety and performance in aquatic sports at the institutional and community levels.

Professional Development Providers. This study will equip Professional Development Providers with knowledge to design certification and training programs for coaches and instructors that emphasize the importance of water competency and risk management in competitive swimming, thereby enhancing the overall quality of coaching in the sport.

Future Researchers. This study will offer Future Researchers a foundation for further exploring the relationship between competitive swimming training, water competency, and risk management, opening up new avenues for research that can contribute to advancements in sports science, safety protocols, and training methodologies.

Scope and Delimitation of the Study

The study will be carried out in Wuhan Sports University in Wuhan Province, China.

The scope of the study will cover the relationship between the assessment of the competitive swimming training on risk management and self-assessment of the water competency by swimming athletes from Wuhan Sports University in Wuhan Province, China.

The study will evolve around the selected profile variables of the swimming athletes such as sex, age, year level, and number of years as a swimming athlete .

To be specific, the swimming athlete respondents' assessment of their competitive swimming training on risk management will be based on the following: injury prevention management, training load and intensity, technique and stroke efficiency, nutritional management, pool safety and awareness, rest and recovery, psychological stress management, and equipment and facility check . This variable will be correlated with the self-assessment of the swimming athlete respondents of their water competency in terms of swimming technique proficiency, breath control and endurance, buoyancy and floating skills, speed and power, water safety awareness, starts and turns, situational awareness, endurance in different water conditions, hydrodynamics and streamlining, and mental toughness and confidence .

In data gathering and utilizing more complex statistical treatment, the study included descriptive statistics and correlational analysis with one-way ANOVA and post hoc analysis to interpret further and investigate the swimming athlete respondents' demographic data and the significant relationship between their assessment of their competitive swimming training on risk management and their self-assessment of their water competency.

Definition of Terms

Aquatic Physiology. The study of how the body responds and adapts to physical activity in

water, influencing training and performance strategies for swimmers.

Breath Control. The ability to manage breathing patterns during swimming, which includes the timing and technique of inhaling and exhaling to enhance endurance and stroke efficiency.

Breath Endurance. The capacity to maintain effective breathing control over prolonged periods of swimming, contributing to overall performance and comfort in the water.

Buoyancy Skills. The ability to remain afloat in water through proper body positioning and movement, which is essential for effective swimming and safety in aquatic environments.

Competition Strategy. The planned approach to racing, including pacing, technique adjustments, and mental preparation to optimize performance on race day.

Conditioning Programs. Structured training regimens aimed at improving physical fitness, strength, and endurance to enhance overall swimming performance.

Endurance in Different Water Conditions. The capability to maintain performance levels while swimming in varying water environments, such as open water, pools, and varying temperatures, which can affect an athlete's stamina and adaptability.

Environmental Awareness. Understanding and adapting to various external conditions, such as temperature, current, and visibility, that can affect swimming performance.

Equipment and Facility Check. Regular assessments of swimming equipment (such as goggles, swimsuits, and flotation devices) and facility conditions (such as pool temperature, water quality, and safety equipment) to ensure a safe training environment.

Floating Skills. The ability to maintain a horizontal position on the water's surface without sinking. This skill is crucial for relaxation and energy conservation during swimming.

Goal Setting. The process of establishing specific, measurable, achievable, relevant, and time-bound objectives to guide training and competitive performance.

Hydration Strategies. Plans for maintaining proper fluid balance before, during, and after swimming to optimize performance and recovery.

Hydrodynamics. The study of how forces interact with swimmers in water, influencing techniques for propulsion, efficiency, and speed.

Injury Prevention Management. Strategies and practices designed to reduce the likelihood of injuries in swimming through proper training techniques, warm-ups, and injury rehabilitation protocols.

Injury Rehabilitation. The process of recovering from swimming-related injuries through therapeutic exercises, medical interventions, and gradual return to training.

Mental Confidence. The belief in one's abilities and skills as a swimmer, which can significantly impact performance and the ability to handle competitive stress.

Mental Toughness. The psychological resilience and determination to overcome challenges, maintain focus, and perform under pressure in competitive swimming environments.

Mobility and Flexibility. The range of motion available at a joint or muscle group, which is vital for executing swimming techniques effectively and reducing injury risk.

Motivational Strategies. Techniques used to enhance athletes' motivation and commitment to training and competition, fostering a positive mindset.

Nutritional Management. The practice of ensuring that athletes consume appropriate nutrients to support their training, performance, recovery, and overall health. This includes macronutrient balance, hydration, and timing of meals.

Pacing Strategies. The techniques employed to manage speed and effort throughout a swim event, ensuring optimal performance without premature fatigue.

Peer Support. The encouragement and camaraderie provided by fellow swimmers, which can enhance motivation, performance, and overall experience in the sport.

Performance Analytics. The use of data collection and analysis to assess swimmers'

performance metrics, identify areas for improvement, and inform training decisions.

Pool Awareness. The understanding of potential hazards and safety protocols in a swimming pool environment. This includes recognizing dangers such as deep water, slippery surfaces, and understanding emergency procedures.

Pool Safety. The measures and practices in place to ensure the safety of all individuals participating in pool activities, including proper supervision, emergency procedures, and equipment availability.

Positive Reinforcement. The practice of encouraging desired behaviors and performances in swimmers through praise, rewards, or recognition, fostering a supportive training environment.

Power. The combination of strength and speed in swimming, reflecting an athlete's ability to generate force quickly for efficient propulsion through the water.

Psychological Stress Management. Techniques and strategies employed to cope with stress and anxiety related to competitive swimming, ensuring athletes maintain mental clarity and focus during training and events.

Recovery Modalities. Techniques employed to facilitate physical recovery after training, such as active recovery, stretching, and contrast baths, which help reduce soreness and fatigue.

Rest and Recovery. The process of allowing the body to recuperate after training sessions through adequate rest, nutrition, hydration, and techniques to reduce fatigue and muscle soreness.

Risk Management. The systematic process of identifying, assessing, and minimizing potential risks in swimming environments to ensure the safety and well-being of participants. This involves implementing strategies and protocols to mitigate hazards.

Situational Awareness. The ability to remain aware of one's surroundings and the potential risks associated with them while swimming, facilitating timely and effective responses to any hazards.

Skill Acquisition. The process of learning and mastering specific swimming skills and techniques through practice and instruction.

Speed. The measure of how quickly an athlete can swim a distance, often evaluated in terms of time taken to complete a specific distance in the pool.

Starts and Turns. The techniques used to initiate a swim race and execute turns efficiently during **competitive swimming.** Mastery of these skills can significantly impact overall race performance.

Streamlining. The technique of positioning the body in a way that minimizes resistance while swimming, enhancing speed and efficiency.

Swimming Drills. Targeted exercises designed to improve specific aspects of swimming technique, speed, and efficiency through focused practice.

Swimming Technique Proficiency. The level of skill and effectiveness in executing swimming **strokes and techniques.** Proficiency is essential for optimal performance and injury prevention.

Team Dynamics. The interactions and relationships among swimmers and coaching staff, influencing performance, morale, and overall team success.

Technique and Stroke Efficiency. The ability to perform swimming strokes with minimal energy expenditure while maximizing speed and propulsion through the water. Effective technique enhances performance and reduces the risk of injury.

Time Management. The ability to efficiently plan and allocate time for training, competition, and recovery, ensuring a balanced approach to athletic commitments.

Training Intensity. The level of exertion during swimming sessions, often gauged by heart rate, perceived exertion, or specific performance metrics, influencing training effectiveness and athlete performance.

Training Load. The overall amount of work or effort exerted during training sessions, combining both training intensity and volume to monitor athletes' performance and recovery needs.

Visualization Techniques. Mental practices used by athletes to imagine successful performances and improve focus, confidence, and execution in swimming events.

Water Competency. The essential skills and knowledge required for individuals to perform safely and effectively in water environments. This includes swimming ability, understanding water safety, and the ability to respond to emergencies.

Water Safety Awareness. Understanding the risks associated with water activities and implementing strategies to ensure personal safety and the safety of others in aquatic environments.

Research Design:

This study employs a descriptive-comparative-correlational methodology distinguished by precise definitions, extensive documentation, and a nuanced understanding of contextual dynamics. As noted by Yamamoto and Tanaka (2024), the objective of descriptive research is to systematically identify and examine the core characteristics, behaviors, and attributes of phenomena in their natural contexts. The primary aim is to generate detailed descriptions of specific entities or to gain a deeper insight into existing situations, thereby establishing a solid foundation for future research.

Building upon the insights of Yamamoto and Tanaka (2024), descriptive research is pivotal in the social sciences and psychology as it facilitates a comprehensive understanding of inherent patterns and behaviors. This approach allows for the collection of reliable and objective data regarding the attitudes, behaviors, and characteristics of target populations, thereby generating valuable insights into societal dynamics.

Moreover, Matsuda and Inoue (2023) emphasize the importance of employing comparative methods to pinpoint critical factors influencing occurrences across diverse contexts or populations. They argue that correlational analysis is essential for enhancing the explanatory power of research designs by uncovering potential causal relationships among variables. In this study, correlational analysis will be utilized to investigate the associations between specific demographic characteristics and relevant attitudes or behaviors linked to the research topic, contributing to the development of theoretical frameworks and effective intervention strategies.

The descriptive-comparative-correlational approach adopted in this research provides a robust framework for deciphering the complex interactions between variables and contexts. By integrating detailed descriptions, comparative analysis, and correlational insights, this methodology draws upon the perspectives of Matsuda and Inoue (2023) and Yamamoto and Tanaka (2024) . This comprehensive approach enhances the validity and depth of the findings, establishing a solid foundation for further inquiry and practical applications in related fields.

This study aims to investigate the swimming athletes' assessment of their competitive swimming training on risk management and its relationship to their self-assessment of their water competency.

This research approach allows the researcher to numerically analyze, compare, and correlate the relationships amongst the dependent variables included in the study.

By utilizing this approach, the researcher will be able to find any significant difference or relationship in the swimming athlete respondents' assessment of their competitive swimming training on risk management and their demographic data such as sex, age, year level, and number of years as swimming athletes . Also, the researcher will be able to find any significant difference or relationship in the swimming athletes' self-assessment of their water competency and their demographic data such as sex, age, year level, and number of years as swimming athletes . The swimming athletes' assessment of their competitive swimming training on risk management and their self-assessment of their water competency will then be correlated . All the above discussions on the descriptive research method will suit the nature of research that this present study would do; hence this method will be adopted.

Research Locale This study will be conducted at Wuhan Sports University in Wuhan Province, China. Wuhan Sports University, abbreviated as "Wuti", is located in Wuhan, Hubei Province. It is a full -time regular higher education institution jointly established by the General

Administration of Sport of China and the People's Government of Hubei Province, mainly managed by Hubei Province. It has been selected as one of the first "Double First Class" universities in Hubei Province.

Wuhan Institute of Physical Education, formerly known as Central South Institute of Physical Education, is one of the first independent full-time regular higher education institutions in the People's Republic of China. It was established in Nanchang, Jiangxi Province in 1953 and relocated to Wuhan, Hubei Province in 1955. In 1956, it was renamed Wuhan Institute of Physical Education and became directly under the General Administration of Sport of China . In 2001, it was jointly established by the General Administration of Sport of China and the People's Government of Hubei Province. The school has one tertiary affiliated hospital and one tertiary affiliated hospital.

The school adheres to the motto of "Public Courage, Sincerity, and Perseverance, Learning, Thinking, and Action" and the educational philosophy of "integrating sports, technology, and humanities education, and integrating morality, culture, and professional qualities" . Over the past 70 years of operation, the school has trained and delivered more than 150000 outstanding talents to the country.

As of January 2024, the school has Donghu (Zhuodaoquan) campus, Canglongdao campus, Donghu High tech Zone (Leopard) and Wudangshan campus, covering an area of 1820 acres; There are 14 secondary colleges and 25 undergraduate majors offered; There is one postdoctoral research station, one first level discipline doctoral degree authorization point, six first level discipline master's degree authorization points, and five professional master's degree authorization points; There are over 900 faculty members, including more than 14000 undergraduate, master's, doctoral, and international students.

Sampling Technique:

The respondents of the study will be the swimming athletes from Wuhan Sports University in Wuhan Province, China. In selecting the swimming athlete respondents, purposive sampling technique will be used among the swimming athlete respondents.

Only those who are bonafide swimming athletes in the university will serve as participants of the study.

Research Instrument:

In gathering the needed data, the researcher will make researcher-made questionnaires on the swimming athletes' assessment of their competitive swimming training on risk management , and their self-assessment of their water competency.

The researcher will use face to face or onsite in administering this questionnaire.

The questionnaire will be composed of the following parts.

Part 1: This section determines the demographic profile of the swimming athlete respondents.

Part 2: This section determines swimming athletes' assessment of their competitive swimming training on risk management

Part 3: This section identifies the swimming athletes' self - assessment of their water competency.

Competitive Swimming Training on Risk Management

Scale	Verbal Interpretation	
3.51 - 4.00	**Very Effective**	*If the statements are very true of their training, 76%-100% level of effectivity.*
2.51 -3.50	**Effective**	*If the statements are true of their training, 51%-75% level of effectivity.*
1.51 -2.50	**Slightly Effective**	*If the statements are slightly true of their training, 26%-50% level of effectivity.*
1.00-1.50	**Not Effective**	*If the statements are not true of their training, 1%-25% level of effectivity.*

Water Competency

Scale	Verbal Interpretation	
3.51 - 4.00	**Very Competent**	*If the statements are very true of them, 76%-100% level of competency.*
2.51 -3.50	**Competent**	*If the statements are true of them, 51%-75% level of competency.*
1.51 -2.50	**Slightly Competent**	*If the statements are slightly true of them, 26%-50% level of competency.*

The adapted questionnaire and the researcher-made questionnaire will be subjected to content validation of the experts who are knowledgeable in the field of research. The suggestions of the experts will be made integral in the instrument.

The same instrument will be submitted for face validation with at least five experts. The questionnaires will be pilot tested to measure reliability. The pilot testing will be computed using Cronbach's Alpha through the Statistical Package of Social Science (SPSS) . The researcher welcomes the suggestions of the experts and will make necessary revisions to construct the said instruments valid.

Data Gathering Procedure:

The researcher will get permission from the office of the principal of Wuhan Sports University in Wuhan Province, China.

When the permission is approved, the researcher will ask permission from the coaches by distributing a letter of consent form to the swimming athlete respondents, which will be signed by them and will be returned to the researcher.

After, the purpose of the study and instructions on how the items on the survey should be answered will be explained to the swimming athlete respondents. Then, the survey will be

administered using the face to face and they will be given enough time to answer the survey.

After completing the survey, the researcher will collect the questionnaires from the swimming athlete respondents.

The data will be gathered, tallied, and processed with Statistical Package for Social Science (SPSS) The processed data will be interpreted and analyzed, and the results will be used to propose an adaptive training intensity program for swimming athletes.

Finally, the interpretation and analysis of data will be done. Summary of findings, conclusions, and recommendations will be formulated.

Statistical Treatment of the Data:

The responses to the survey questionnaire will be tallied using the SPSS, and then they will be tabulated and organized accordingly. The data will be presented, analyzed, and interpreted using frequency, percentage, mean, standard deviation, independent samples t-test, one-way ANOVA, and Pearson's r correlation.

1. For research question no. 1, descriptive statistics such as frequency counts and percentages will be used to treat responses in the demographic profile of the swimming athlete respondents.

2. For research question nos. 2 and 4, weighted means will be utilized to treat the assessment of the swimming athlete respondents of their competitive swimming training on risk management in terms of injury prevention management, training load and intensity, technique and stroke efficiency, nutritional management, pool safety and awareness, rest and recovery, psychological stress management, and equipment and facility check .

Weighted means will also be used to compute for the self-assessment of the swimming athlete respondents of their water competency in terms of swimming technique proficiency, breath control and endurance, buoyancy and floating skills, speed and power, water safety awareness, starts and turns, situational awareness, endurance in different water conditions, hydrodynamics and streamlining, and mental toughness and confidence .

The following will be used to interpret the WM of the athletes' responses:

Mean Range	Verbal Description
3.51 - 4.00	Very True of My Training/ Very True of Me
2.51 - 3.50	True of My Training/ Very True of Me
1.51 - 2.50	Slightly True of My Training/ Very True of Me
1.00 - 1.50	Not True of My Training / Very True of Me

3. For research question nos. 3 and 5 , one way ANOVA with post-hoc analysis (Scheffe) will be used to find out the significant difference in the assessment of the swimming athlete respondents of their competitive swimming training on risk management and their self-assessment of their water competency.

4. For research question no. 6 , Pearson's r correlation analysis will be utilized to determine the significant relationship between competitive swimming training on risk management and water competency among swimming athletes.

Ethical Considerations

The researcher will constructively consider and carefully follow the ethical considerations that must be met to protect the rights of all the respondents. The following are the ethical considerations:

1. Conflict of Interest

The researcher of this study ensured that there would be no conflict of interest . The researcher needed to elaborate and clearly state the purpose of this research and study to the chosen respondents. It is also a must that the researcher

must stick to the purpose of gathering personal information and data. All gathered data must not be used for any form of exploitation against the respondents. The researcher must stick to the objective of the research and its purpose.

2. Privacy and Confidentiality

Before conducting this research, the respondents will be assured that whatever information would be gathered would be confidential, and the survey results cannot be given to anyone aside from the researcher himself and the person who answered the survey – questionnaire. The researcher must not mention the respondents' names in presenting the data gathered to protect their privacy. The identity of the respondents would remain anonymous or free from any clues and suggestions that would lead others to connect or relate with the respondents.

3. Informed Consent Process

Before conducting the survey questionnaire, the researcher will secure a consent form that gives confirmation and consent from the respondents that they understand the purpose and objective of this study and agreed that the data gathered would strengthen the researcher's study. The researcher will make sure that she explains thoroughly and clearly everything to the respondents without any deception. The process and the possible risks in participating in this study will also be discussed.

4. Recruitment

The respondents of this study will be the physical education teachers. The respondents will be free to exercise their rights to disagree and agree in participating in this study. The respondents will not be forced to participate and will be given the freedom to refuse at any point in time.

5. Risk

he researcher of this study will ensure that there would be no risk in participating in this study. The respondents will ensure that whatever data and information would be gathered would not harm respondents' life and name. The respondents had all the rights to freely stop the conduct of questions at any given time if they felt harassed, questions were too personal and or violated.

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