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The impact of self-esteem on agility performance among senior Karatekas of the Tunisian national team

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Abstract

The psychological state of athletes exerts a substantial influence on their performance outcomes. Self-esteem, in particular, has been identified as a pivotal factor in determining results at the highest levels of competition in sports. This study explores the relationship between self-esteem and agility performance, as well as its impact on ranking among senior karatekas of the Tunisian National Team. The study sample comprised 36 karatekas (20 males, 16 females; mean age: 22.36 ± 3.83 years; mean weight: 66.5 ± 11.5 kg; mean height: 177.7 ± 7.9 cm), including 13 top-ranked (8 males, 5 females) and 23 lower-ranked athletes (12 males, 11 females). The Rosenberg Self-Esteem Scale was utilized to assess self-esteem levels, while the Specific Karate Agility Test (SKAT) was employed to evaluate agility performance. The collection of data occurred during training sessions to ensure consistency. The findings indicated a substantial positive correlation between self-esteem and agility performance ($p < 0.001$), suggesting that individuals with higher self-esteem levels exhibited superior agility. Furthermore, the findings indicated that self-esteem significantly influenced both performance and ranking ($p < 0.001$), as higher-ranked karatekas consistently exhibited elevated self-esteem and superior agility metrics. These findings underscore the essential role of self-esteem in optimizing physical performance and competitive success, underscoring the necessity for psychological support to enhance self-esteem in elite athletes.

Keywords: Self-esteem, agility performance, karate, Tunisian national team.

Introduction

The mindset of an athlete is not a matter of chance; rather, it is a critical component of performance. In addition to physical preparation, mental preparation plays an equally vital role. This mental preparation focuses on psychological skills such as motivation, self-confidence, and self-esteem to achieve desired goals. Mental readiness ensures that athletes can handle pressure effectively, adapt to challenges, and maintain focus during competition. These factors are necessary for optimal performance [1]**.**

In the discipline of karate, the integration of mental and physical factors is paramount to optimal performance. Success in this discipline is contingent not only on technical proficiency but also on motor, morphological, functional, and psychological capabilities [2]. This comprehensive approach underscores that physical fitness alone cannot ensure success in karate; mental resilience and agility are equally critical to attaining peak performance**.**

The pedagogy of karate extends beyond mere movements and techniques, impacting neurocognitive activity where performance relies on reaction speed, agility, and psychological factors [3]. Neurocognitive benefits include improved decision-making and faster reaction times, both of which are crucial for mastering the dynamic and fast-paced environment of competitive karate. Karate fosters personal and social development, with self-awareness (self-esteem) and social connection as key objectives. *Mead* [4] posited that self-concept is shaped by feedback from significant others, emphasizing the social dimension of karate and its role in shaping athletes' confidence and self- perception, which in turn influences their performance [5].

As posited by *Chaabane et al.* [6], agility is a critical physical quality for karatekas, enabling quick directional changes in response to stimuli [5,7]. Agility is not only a physical skill but also a mental one, requiring the ability to anticipate and respond to an opponent's movements with precision and speed**.**

The field of sports psychology has seen an increasing focus on performance antecedents and psychological well-being. Self-esteem has emerged as a vital factor in athletic performance [8]. Athletes with higher self-esteem are more likely to take risks, exhibit resilience, and recover quickly from setbacks, all of which are vital for maintaining high performance [5,7].

The influence of self-esteem on athletic performance and motor skills, such as agility, which is important in karate, has been well-documented [8-10]. This relationship underscores the importance of structured training programs in fostering both psychological growth and physical competence**.**

The superior agility exhibited by top-ranked karatekas, frequently associated with elevated self-esteem [7], underscores the intertwined nature of these factors. This association suggests a symbiotic relationship between mental confidence and physical readiness, which enables elite athletes to outperform their peers. Research by *Jawaher et al.* [11] demonstrated that high self-esteem enhances physical performance, while low self-esteem correlates with suboptimal results. In a similar vein, *Lamri et al.* [12] underscored the pivotal role of self-esteem in youth sports performance. This underscores the notion that fostering positive self-perception from an early age could be instrumental in cultivating future champions.

Gender and practice level have been demonstrated to influence self-esteem, with females and substitutes exhibiting lower levels [13,14]. This finding underscores the necessity for tailored interventions to address the unique psychological needs of diverse athlete groups, ensuring equity in training outcomes**.**

The present study aims to examine the relationship between self-esteem and agility performance, and how self-esteem influences ranking and agility among senior Tunisian karatekas specializing in kumite. By integrating psychological and physical assessments, this research seeks to provide a holistic understanding of the factors driving success in competitive karate.

1. Method

1.1 Sample

The present study was conducted on a population of 36 karatekas from the senior category of the Tunisian National Karate Team, specializing in kumite. The karatekas were in good health, with a mean age of 22.36 years, a standard deviation of ± 3.83 years, a mean weight of 66.5 kg, a standard deviation of ± 11.1 kg, and a mean height of 177.7 cm, with a standard deviation of ± 7.9 cm. This demographic ensures the inclusion of experienced athletes at the peak of their physical and competitive potential, providing a reliable basis for evaluating performance variables. The participants voluntarily consented to participate in the study after receiving a comprehensive explanation of its objectives. The voluntary participation of the athletes is a testament to the study's ethical framework, as it ensures that the athletes are cognizant of their role and the objectives of the study**.**

The analysis of performance metrics revealed that 13 karatekas attained the highest rankings following their participation in World Championships and received international rankings from the World Karate Federation (WKF). The remaining 23 participants were among the lower-ranked athletes, having participated in national championships and having received poor

rankings in the African Championship Zone 1. This distinction between top-ranked and lower-ranked athletes facilitates a comparative analysis of performance levels, emphasizing the potential influence of self- esteem on ranking and agility.

1.2 Applied Tests

The tests administered in this study are distinguished by their extensive application in sports practice, particularly among karatekas, due to their ease of use and reliability. These assessments are meticulously designed to provide precise and actionable insights into the psychological and physical attributes that are critical for optimal performance in karate**.**

The applied tests include the Rosenberg Self-Esteem Scale (RSES, 1965), a widely recognized tool for measuring self-esteem levels. The simplicity and validity of the RSES ensure consistent results across various populations and contexts, making it a standard measure for assessing self-esteem**.**

The Specific Agility Karate Test (SKAT), developed by *Ben Hassen et al.* [7], was utilized to evaluate agility performance in karatekas. This test was developed to address the specific demands of karate, emphasizing movements and responses that are unique to sport. As a result, the SKAT has become a preferred method for assessing agility in karate practitioners.

1.3 Experimental Protocol

For the purposes of this study, direct contact was initiated with the president and the technical director of the Tunisian Karate Federation, as well as the national coaches of the senior kumite karate team. This collaborative approach facilitated seamless access to the athletes and institutional support, thereby enhancing the study's credibility and logistical feasibility**.**

Following the acquisition of necessary approvals, the study was conducted at the El Menzah Sports Complex during the competitive season, specifically in April 2022. Measurements were obtained during training sessions, rather than on competition days, to mitigate potential stress or performance variability. This timing was chosen to minimize potential stress or performance variability that might arise during competition, ensuring more consistent and reliable data collection**.**

Prior to the initiation of the study, all participants were required to attend two familiarization sessions. The first session focused on anthropometric measurements, including age, height, and weight. The second session involved an introduction to the SKAT (Specific Karate Agility Test). These sessions were designed to mitigate potential learning effects and ensure that participants were adequately prepared, thereby enhancing the accuracy of the results**.**

1.4 Tools and Statistical Analyses

All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS; version 28, IBM, Armonk, NY, USA). Initially, the data obtained through the questionnaire was entered into Microsoft Excel to construct the database. This approach ensured efficient data organization and accuracy prior to analysis**.**

Means, variances, and standard deviations (SD) were calculated for each measured parameter. The data analysis entailed a one-way analysis of variance (ANOVA), with effect sizes determined using Pearson's correlation coefficient. These robust statistical tools provided a comprehensive understanding of the relationships between variables, ensuring reliable insights into the dataset**.**

An initial impression was obtained from the sample data, suggesting a potential relationship between agility and self-esteem. To formally test this hypothesis, a bivariate linear regression analysis was conducted to explore the relationship between these two variables. This approach is well-suited for examining the direct influence of self-esteem on agility performance, providing both statistical and practical significance**.**

Pearson's correlation coefficient, the most widely employed metric for assessing relationships,

was utilized to ascertain the existence of this correlation in the population. The statistical significance threshold was set at ≤ 0.005 ($p \leq 0.005$). This rigorous threshold ensures the results are both statistically reliable and scientifically meaningful, allowing for precise conclusions about the connection between agility and self-esteem.

2. Results

2.1 Self-Esteem Study

The distribution of self-esteem scores and levels is illustrated in **Figure 1**, highlighting notable variations among participants. The analysis reveals that 16.7% of the participants exhibit a low level of self-esteem, indicating a smaller proportion facing potential psychological challenges**.**

Conversely, the majority of participants are distributed evenly across the medium, high, and very high self-esteem levels, with each category representing 27.8% of the participants. This balanced distribution underscores the diversity of self-esteem levels within the group, reflecting variations in psychological readiness and its potential impact on performance**.**

These findings offer valuable insights into the psychological profiles of the karatekas, emphasizing the importance of addressing self-esteem as a critical factor in training and performance optimization.

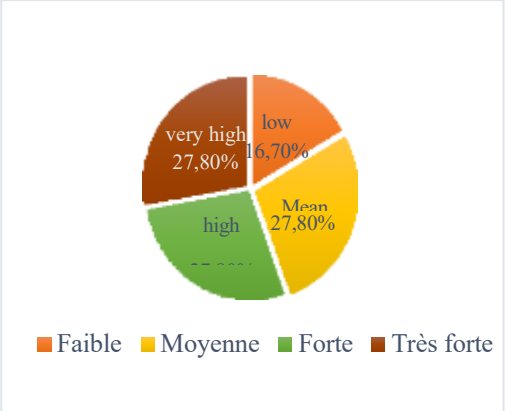

Figure 1. Distribution of Participants' Self-Esteem Levels.

Table 1 presents the distribution of mean self-esteem scores by gender, revealing notable differences between male and female participants. Males demonstrated the highest mean self-esteem scores, with a mean of 36, indicative of heightened confidence and psychological stability within this demographic**.**

In comparison, females exhibited slightly lower self-esteem scores, with a mean of 33.88. This

discrepancy underscores the potential for gender disparities in self-perception and psychological dynamics, which may influence athletic performance and motivation**.**

These findings underscore the importance of tailored psychological support strategies to address gender-specific needs and enhance self-esteem across all athletes.

Table 1. Distribution of Participants' Mean Self-Esteem Scores by Gender (n=36)

SE	N	Mean	Median	Min	Max	SD
F	16	33.88	32.50	29	40	3.94
M	20	36	36.50	30	40	3.40
Total	36	35.06	35	29	40	3.75

In contrast, practitioners with lower rankings exhibited lower self-esteem scores, with a mean of 32.70. This finding underscores the notion that self-esteem exerts a substantial influence on competitive performance and overall ranking**.**

These findings underscore the imperative for integrating psychological training into athletic programs to enhance self-esteem, thereby leading to improved performance outcomes.

Table 2. Distribution of Participants' Self-Esteem Based on Ranking.

SE	N	Mean	Median	Min	Max	SD
F	16	33.88	32.50	29	40	3.94
M	20	36	36.50	30	40	3.40
Total	36	35.06	35	29	40	3.75

2.2 Agility Study (SKAT)

As demonstrated in Table 3 and Figure 2, a comparative analysis of the agility performance (SKAT) and ranking of the participants reveals significant disparities between the two groups. The "higher ranked" group exhibited the most expeditious SKAT times, ranging from 5 to 6.02 seconds, with an astounding average of 5.28 seconds (5.27 ± 0.28 seconds), thereby demonstrating superior agility performance.

Conversely, the "lower-ranked" group exhibited prolonged SKAT times, ranging from 6.11 to 8 seconds, with an average time of 6.93 seconds (6.93 ± 0.46 seconds). This discrepancy suggests that many lower agility scores were observed among the lower-ranked participants, underscoring the strong correlation between agility performance and ranking.

These findings underscore the importance of agility training in improving competitive performance and achieving higher rankings.

Table 3. Representation of Participants' Average Agility Performance (n=36).

	N	Mean (sec)	Med (sec)	Min (sec)	Max(sec)	SD
SKAT	36	6.33	6.52	5	7.95	0.90

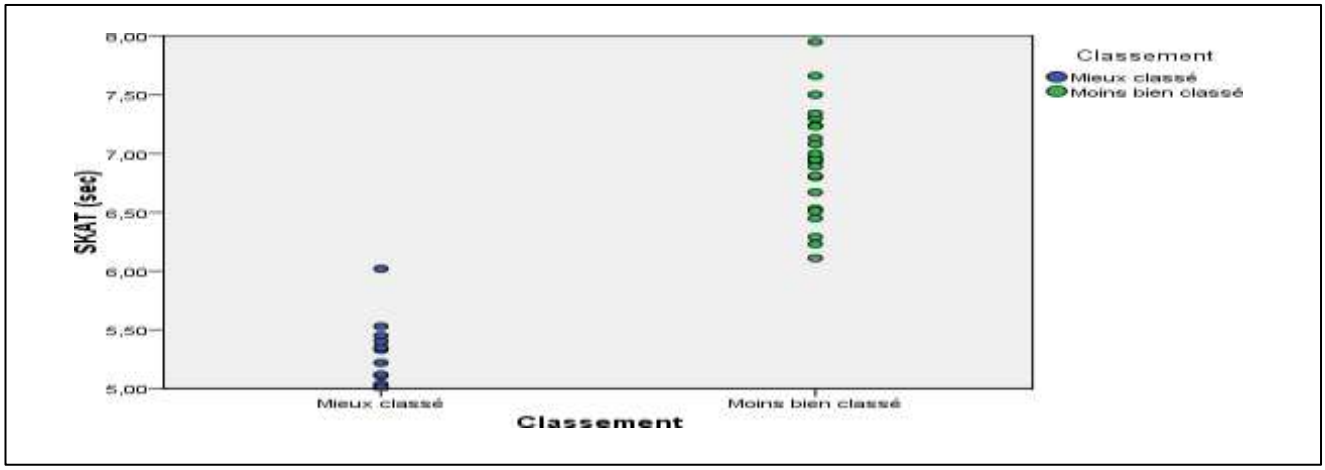

Figure 2. Representation of Participants' Agility Performance by Ranking.

2.3 Study of the correlation between self-esteem and agility

Figure 3 presents the results of the correlational analysis between self-esteem (ES) and agility, demonstrating a very strong positive relationship. The Pearson correlation coefficient, r, approaches 1, with a p-value less than 0.001, and an R^2 of 0.88, indicating a nearly perfect linear correlation. This finding suggests that as self-esteem increases, agility performance is enhanced, as evidenced by a decrease in SKAT times. Higher self-esteem enables karatekas to exhibit superior motor coordination and faster reaction times, both of which are critical for success in kumite matches. Specifically, as self-esteem transitions from low to high levels, SKAT times consistently decrease from longer to shorter durations, thereby showcasing the direct impact of psychological readiness on physical outputs**.**

Figure 4 demonstrates the correlation between self-esteem (ES) and agility based on ranking, which also reveals a strong linear relationship. The statistical analysis, as indicated by the Pearson correlation coefficient ($r=0.80$, approaching 1), $p<0.001$, and $R^2=0.88$, substantiates the positive relationship between heightened self-esteem and enhanced agility, as well as superior rankings. This finding suggests that psychological factors, such as confidence and self-perception, play a direct role in competitive success. The top-ranked karatekas exhibit not only superior physical performance but also demonstrate remarkable mental resilience, which reinforces their agility during high-pressure scenarios in competitive environments**.**

These findings underscore the pivotal role of self-esteem in enhancing agility and overall competitive success in karate. This underscores the necessity for a multifaceted approach to athletic training, encompassing both psychological and physical training components, to

optimize the development of mental and motor skills in athletes.

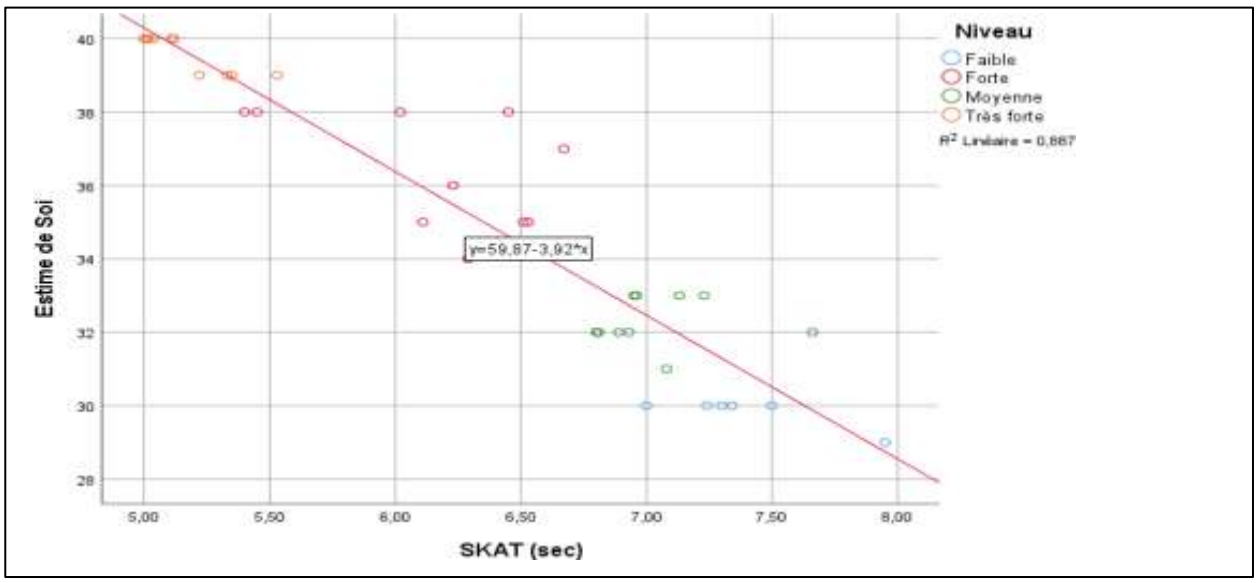

Figure 3. Representation of the Correlation between Self-Esteem and Agility in Participants.

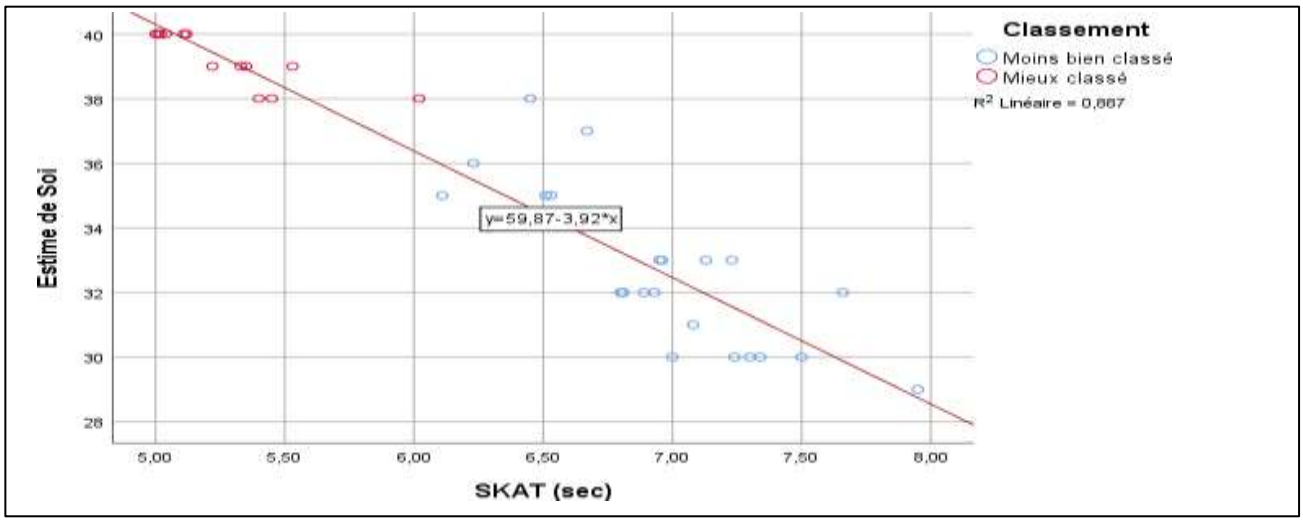

Figure 4. Representation of the Correlation between Self-Esteem and Agility Based on Ranking.

3. Discussion

Self-esteem and positive self-perception are fundamental to an individual's development and psychological well-being [15,16], and their importance is particularly evident in athletes. Self-esteem emerges as a significant determinant of sports performance, with *Lamri et al.* [12] underscoring its crucial role in athletic success. Athletes who possess a heightened sense of

self-worth are more likely to demonstrate excellence in competitive environments, where psychological resilience is as

essential as physical prowess. The level of self-esteem varies according to ranking, as evidenced by Rosenberg's Self-Esteem Scale (RSES). The findings substantiate that higher-ranked participants consistently exhibit elevated self-esteem scores in comparison to their lower-ranked counterparts. This finding underscores the psychological advantages held by elite athletes, where confidence and self-belief significantly enhance performance outcomes. The study's results highlight the influence of self-esteem on agility performance among karate practitioners, further emphasizing its role as a performance indicator**.**

Significant differences were also observed in the agility performances of the "higher-ranked" and "lower-ranked" groups. These outcomes align with the findings of *Ben Hassen et al.* [7], which demonstrated a correlation between SKAT performance and karateka's ranking, suggesting that agility is not merely a physical skill but is also profoundly intertwined with psychological readiness. Similarly, *Holmberg* [17] revealed that athletes with higher performance levels consistently demonstrate superior agility, showcasing the synergy between mental and physical preparation.

The present study examined the relationship between self-esteem and performance. The participants exhibited an average self-esteem score of 35.06 ± 3.75, accompanied by an average SKAT score of 6.33 ± 0.9 seconds. These findings underscore the correlation between physical performance and elevated self-esteem, suggesting that enhanced physical outcomes are concomitant with heightened self-worth. Conversely, lower performance levels are typically accompanied by reduced self-esteem, reflecting the interdependence of psychological and physical factors in sports. These results are consistent with those reported by *Jawaher et al.* [11], who found that higher physical and sports performance is linked to elevated self-esteem levels**.**

The relationship between self-esteem and agility performance through the SKAT-based ranking method revealed that higher-ranked karate practitioners exhibited both greater self-esteem and superior agility compared to their lower-ranked peers. This finding aligns with the results demonstrated that starting players had higher self-esteem and better performance compared to substitutes. The psychological preparedness advantages are evident, as self-esteem becomes a determining factor in ranking and performance. *Eloirdi et al.* [18] also emphasized the significant impact of self-esteem on athletic ranking and performance

outcomes, thereby further validating these findings.

A substantial empirical corpus has emerged in support of the notion that psychological factors exert a significant influence on the performance of athletes. This assertion is further substantiated by the findings of numerous studies, including those by *Cazorla et al.* [19], *Zerzouri* [20], *Eloirdi et al.* [18], *Lamri et al.* [12], *Rossi et al.* [1], and *Ben Hassen et al.* [7]. These studies collectively emphasize the pivotal role that an athlete's psychological state plays in determining their performance outcomes. The findings of the present study offer further evidence for the strong correlation between self-esteem and performance, illustrating how self-esteem can directly impact both physical and sports outcomes. These findings underscore the importance of incorporating psychological training into athletic programs to optimize both mental and physical performance.

4. Conclusion

This study corroborates and extends prior research by confirming that self-esteem is a decisive factor in physical and sports performance, as well as athlete ranking. The findings underscore a

robust correlation between self-esteem and performance, wherein elevated self-esteem is persistently linked to superior agility outcomes. These findings underscore a dual nature of this relationship: on the one hand, high self-esteem levels have been shown to positively influence performance, while on the other hand, low self-esteem can have a detrimental impact on performance and ranking**.**

From a pragmatic perspective, the periodic evaluation and regulation of self-esteem emerge as indispensable strategies for enhancing athletic performance. The integration of a sports psychologist into the team dynamic is strongly recommended to address self-esteem and its role in performance enhancement. These interventions are designed to optimize physical outcomes and enhance athlete rankings, providing a significant competitive advantage for sports teams in Tunisia.

REFERENCES

1. Rossi, C., Roklicer, R., Tubic, T., Bianco, A., Gentile, A., Manojlovic, M., Maksimovic, N., Trivic, T., & Drid, P. (2022). The role of psychological factors in judo: A systematic review. International Journal of Environmental Research and Public Health, 19(4), 2093. https://doi.org/10.3390/ijerph19042093
2. Dewangga, Y., Siswantoyo, T., Tomoliyus, S., Sumaryanti, D., Tirtawirya, P., Paryadi, L. O. A., Virama, A., & Naviri, S. (2021). Development of agility test construction: Validity and reliability of karate agility test construction in kata category. International Journal of Human Movement and Sports Sciences, 9(4), 697-703. https://doi.org/10.13189/saj.2021.090413
3. Lombard, G. (2016). Analyse de l'implantation d'un protocole d'entraînement de la vitesse dans une équipe de football.
4. Mead, G. H. (1963). L'Esprit, le Soi et la Société. Revue française de sociologie, 4(4), 461-463.
5. Lloyd, R. S., Read, P., Oliver, J. L., Meyers, R. W., Nimphius, S., & Jeffreys, I. (2013). Considérations pour le développement de l'agilité pendant l'enfance et l'adolescence. Journal de force et de conditionnement, 35(3), 2-11.
6. Chaabène, H., Franchini, E., Miarka, B., Selmi, M. A., Mkaouer, B., & Chamari, K. (2014). Time–motion analysis and physiological responses to karate official combat sessions: Is there a difference between winners and defeated karatekas? International Journal of Sports Physiology and Performance, 9(2), 302-308.
7. Ben Hassen, S., Negra, Y., Uthoff, A., Chtara, M., & Jarraya, M. (2022). Reliability, validity, and sensitivity of a specific agility test and its relationship with physical fitness in karate athletes. Frontiers in Physiology, 13, 841498. https://doi.org/10.3389/fphys.2022.841498
8. Coopersmith, S. (1982). Les antécédents de l'estime de soi. Le Journal de l'éducation et du développement humanistes, 21, 18-21. https://doi.org/10.1002/j.2164-4683.1982.tb00207.x
9. Gruber, J. J. (1986). Physical activity and self-esteem development in children: A meta-analysis. In G.A. Stull & H. M. Eckert (Eds.), Effects of physical activity on children (pp. 30-48). Champaign, IL: Human Kinetics.

10. Schempp, P., Cheffers, J., & Zaichkowsky, L. (1983). Influence of a decision.
11. Jawaher, M., Dorsaf, T., Ines, F., Imen, B., & Abdelaziz, J. (2015). Le rendement sportif, l'estime de soi et le profil tempéramental : Quelles relations ? La Tunisie Médicale, 93(3).
12. Lamri, D., Khiam, M., & Hassouni, T. (2016). Impact de l'estime de soi sur la performance sportive chez les jeunes adolescents scolarisés. Anthropologie, 36, 85.
13. Fourchard, F., & Courtinat-Camps, A. (2013). La place de l'estime de soi globale et physique dans la construction identitaire de l'adolescent. In Actualités de la psychologie du développement et de l'éducation (pp. 296-303).
14. Goñi, A., & Zulaika, L. (2001). L'éducation physique à l'école et l'amélioration du concept de soi. Staps. https://doi.org/10.3917/sta.056.0075
15. Rosenberg, M. (1965). Échelle d'estime de soi de Rosenberg (RSE). In Thérapie d'acceptation et d'engagement: Paquet de mesures, 61(52), 18.
16. Sonstroem, R. J., Harlow, L. L., & Josephs, L. (1994). Exercise and self-esteem: Validity of model expansion and exercise associations. Journal of Sport and Exercise psychology, 16(1), 29-42.
17. Holmberg, P. M. (2015). Entraînement d'agilité pour les athlètes expérimentés : Une approche systémique dynamique. Journal de force et de conditionnement, 37(3), 93-98.
18. Eloirdi, A., Arfaoui, A., & Ahami, A. O. T. (2014). Évaluation de l'impact de l'estime de soi et de l'état dépressif sur la performance sportive chez les jeunes adolescents scolarisés. Antropo, 32, 25-34.
19. Cazorla, G., Monpetit, R., Prokop, P., & Cervetti, J.-P. (1984). De l'évaluation des nageurs de haut niveau à la détection des jeunes talents. Éditions INSEP, 185-208. Paris.
20. Zerzouri, S. (2002). Certains déterminants psychosociologiques de la performance sportive-le cas de l'athlétisme (Doctoral dissertation, Thèse de doctorat à l'ULB. Bruxelles).