Effect of Mental Imagery and Self-Talk Training on Speed of Athletes in University of Port Harcourt.

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Abstract
Purpose: *This study examined the effect of mental imagery and self-talk training on the speed of track and field athletes at the University of Port Harcourt. The study was motivated by the need to strengthen psychological preparation as a complement to conventional physical and technical training for improved athletic performance.*
Methods: *A quasi-experimental pre-test–post-test control group design was adopted. Twenty (20) registered track and field athletes who met the study eligibility criteria were purposively selected and assigned to experimental and control groups. The experimental group participated in an eight-week mental skills training programme comprising guided mental imagery, relaxation, motivational imagery, self-talk awareness and restructuring, event-specific self-talk, and combined imagery–self-talk practice, in addition to regular physical training. The control group continued with regular physical training without the psychological intervention. Speed was assessed using the 30-metre sprint test before and after the intervention. Data were analyzed using mean, standard deviation, and analysis of covariance (ANCOVA) at the 0.05 level of significance.*
Results: *The findings showed an improvement in sprint performance following the intervention, with mean 30-metre sprint time decreasing from 4.79 ± 0.04 seconds at pre-test to 4.52 ± 0.05 seconds at post-test, representing a mean improvement of 0.27 seconds. ANCOVA indicated a statistically significant effect of mental imagery and self-talk training on speed, $F(1, 18) = 10.286$, $p = .005$, with a large effect size (partial $\eta^2 = .364$).*
Conclusion: *Mental imagery and self-talk training significantly enhanced the speed performance of the athletes. The findings provide empirical support for integrating structured psychological skills training into conventional athletic preparation, particularly for sprint and speed-development programmes. Such integration may provide a more comprehensive approach to optimizing athletes' physical and psychological readiness for competitive performance.*

Keywords: *mental imagery; self-talk; psychological skills training; speed; sprint performance; track and field athletes; University of Port Harcourt.*

Introduction

Speed is an integral part of sports and is important in many individual and team sports for success. It is the capacity of the athlete to change the body's (or a body part's) position quickly

from one to another, especially in sprinting, football, basketball, volleyball, and other sports where quick changes of acceleration and body position are needed. While physical attributes like muscular strength and power, reaction time, flexibility and neuromuscular coordination play a significant role in speed performance, modern sport science has identified that psychological attributes also play a role in sport performance. The efficiency with which an athlete's physical capabilities are expressed could be affected by their concentration, control of thoughts and feelings, confidence and mental preparation. In sport settings in Nigeria, recent evidence has also shown that psychological pressures such as stress and anxiety can also affect the performance of competitive athletes, further underscoring the need for the inclusion of psychological preparation in the traditional physical and technical training (Ochor & Amasiatu, 2024).One of the skills that have been used to improve athletic performance is the mental picture. Mental imagery is the deliberate activation or recreation of an experience in the mind without having the athlete actually perform the activity. Imagery allows athletes to 'rehearse' a movement, technique, competition situation, and/or desired performance outcome in their mind. Vickers (2016) stated that imagery and mental practice can help the athlete build attentional control skills and plan for perceptual and cognitive components of performance. Likewise, Moran (2018) reported that mental imagery is a psychological tool that plays an important role in motor learning, focus and concentration, confidence, and preparation for performance. For speed athletes, imagery can be especially beneficial since athletes can use mental practice to prepare for their explosive starts, acceleration phases, stride patterns, positioning of the body, and the efficient ways of moving. Mental rehearsal can thus be used to supplement physical training to boost the mental image of movement and enhance the ability of athletes to perform skills that require speeds better.

Another psychological skill that could have an impact on athletic performance is self-talk. Self-talk is the inner dialogue, words or phrases athletes use before, during and after performance. It can be teaching, encouraging or attentional and emotional controlling. Instructional self-talk can focus an athlete's focus on certain aspects of technique while motivational self-talk can increase effort, confidence, persistence, and perceived ability. In their meta-analytic study, Hatzigeorgis et al. (2011) found that self-talk can enhance sport performance, especially when the nature of the self-talk is meaningful to the performance task. Also, Tod et al. (2011) highlighted the need for systematic self-talk strategies for athletes to deal with psychological demands and enhance performance. The emphasis on psychological regulation is especially pertinent in the university sport context in Nigeria as recent studies on athletes of University of Port Harcourt has demonstrated the need for mental awareness, emotional regulation and application of psychological strategies in preparation for competition (Ochor & Amasiatu, 2026). The efficacy of mental imagery and self-talk could be especially important when these are integrated into a program of psychological skills training. The main methods mental imagery can offer to the athlete are to rehearse desired movements and performance situations, and self-talk to give a quick cognitive cue to direct attention, motivation and execution. They are complementary, so it could be beneficial for athletes to receive both types of information together to create a mental representation of the desired performance, as well as verbal suggestions to perform the desired movement. Previous intervention studies by Ochor et al. (2024) have shown that systematic psychological training can be effective in achieving measurable gains for sport-specific skills; goal-setting training has shown to enhance football passing skills in student-athletes. Past studies have consistently shown a positive correlation between psychological skills training and sport performance, but the effect may range depending on the type of sport, athlete trait, nature of intervention, and sport outcome measured (Slimani et al. 2016). Although psychological skills training is becoming more popular, there

is still a need for specific evidence regarding the effects of the combined training of mental imagery and self-talk on objectively measurable physical performance results (such as speed). The athletes compete in competitive sporting events with the requirement of speed being an important performance criterion within the University of Port Harcourt. Physical preparation, technical preparation, nutrition, and tactical development are often the focus of attention whereas psychological preparation may not be given the same amount of focus. This is in line with recent studies from the University of Port Harcourt showing that mental awareness and capacity for psychological self-regulation among athletes is a factor to consider when optimising competitive performance (Ochor & Amasiatu, 2026). Even if an athlete has the physical capacity to perform well, poor concentration, confidence, thoughts, or preparation can still get in the way of the athlete reaching maximum performance. This means there is a need to explore psychological methods which may be incorporated into the athletes' regular training routines.

Statement of the Problem

The University of Port Harcourt has a long history of success in Nigeria's University Sports, having won several medals in competitions like the Nigerian University Games Association (NUGA) and West African University Games (WAUG). But enjoying success in regional and national university competitions does not automatically guarantee continuity of success at higher levels where athletes are expected to sustain their performance at a high level under conditions of increased physical and mental stress. A factor might be the lack of integration of systematic psychological skills training into the traditional approach to athletic preparation, as it tends to focus more on physical preparation, technical skills, and tactical development. Physical factors like strength, power, coordination and neuromuscular efficiency play a part in speed, as do mental factors, like concentration, confidence, motivation and mentally preparing for the event, which is important in sprinting and in many team sports. Mental imagery and self-talk are known psychological skills which can positively influence concentration, confidence, motor preparation, effort and performance in athletes, however, their systematic use in the speed development of Nigerian University athletes is not well established. More importantly, there is little empirical evidence as to whether using mental imagery and self-talk training in addition to traditional physical preparation will lead to measurable changes in the speed of athletes within the University of Port Harcourt. This gap is crucial as athletes can have the physical ability to perform well, but not translate that to a top level of speed performance due to lack of mental preparation. The problem which formed the basis for this study was the absence of adequate context-specific empirical evidence that mental imagery and self-talk training as psychological intervention improves the time of athletes in the University of Port Harcourt and thus required an empirical study of the effects of mental imagery and self-talk training.

Aim of the study

The aim of this study was to examine the effect of mental imagery and self-talk training on speed of athletes in University of Port Harcourt.

Research Questions

To what extent does mental imagery and self-talk training influence the speed of athletes in University of Port Harcourt?

Hypotheses

There is no significant effect of mental imagery and self-talk training on speed of athletes in University of Port Harcourt.

Methodology

The study was a quasi-experimental pre-test, post-test control group design to test the effect of mental imagery and self-talk training on the speed of athletes at University of Port Harcourt. The population consisted of the full number of registered track and field athletes from the University for the 2024/2025 academic year. Twenty athletes were purposively selected who met the following criteria: participants are currently involved in track and field activities, medical clearance for physical activity, no formal training in mental imagery and no formal training in self-talk.The 20 participants who met the following criteria were assigned to an experimental group and a control group: currently participating in track and field events, medical clearance for participation in physical activity, and not having participated in formal mental imagery training and self-talk training. The mental skills training programme was a structured programme that was administered to the experimental group for 8 weeks, in addition to their physical training, and the control group received regular physical training only. The main test performed was the 30-metre sprint test that determined the speed of acceleration and short distance running speed. All the athletes were placed in a standing position 0.5 metres behind the starting line, and were required to run as fast as they could on a track of 30 metres when they were given a signal. Two trials were made, the fastest was in 0.01 seconds.

The mental skills intervention was conducted for 8 weeks in two 45–60 minute sessions per week. Psychoeducation, guided mental imagery from internal and external perspectives, relaxation exercises, motivational imagery, restructuring of negative self-talk, event-specific self-talk scripting and imagery + self-talk practice under simulated performance conditions were incorporated into the training. Emphasis was placed on sprint-related imagery (sprint starts and movement mechanics) as well as performance cues (e.g. “explode and drive”), particularly during the technique session, self-talk session and combined-practice session of the programme. The 30 m sprint was used to measure the sprint speed before and after the intervention to determine the difference in sprint performance between the experimental and control conditions. Descriptive statistics (mean and standard deviation) were used for analysis of the data, and analysis of covariance (ANCOVA) was used to determine differences in post-test scores controlling for pre-test scores. The level of significance was set at 0.05.

Results

Table 4.1: Frequency and Percentage Distribution of Participants’ Age (N = 20)

Age (Years)	Frequency (f)	Percentage (%)
16–18	6	30%
19–21	9	45%
22–24	5	25%

Age (Years)	Frequency (f)	Percentage (%)
Total	**20**	**100%**

The age distribution the table above shows that the majority of athletes (45%) are in the age group of 19–21 years, 30% in the age group of 16–18 years, and 25% in the age group 22–24 years. This indicates that the majority of participants are of the late adolescent/early adulthood age group, a stage where physical development and athletic performance potential is at its best. The distribution is appropriate for exploring performance-related fitness and motor behaviour in the age range.

Table 4.2: Frequency and Percentage Distribution of Participants' based on Sex (N = 20)

Sex	Frequency (f)	Percentage (%)
Male	12	60%
Female	8	40%
Total	**20**	**100%**

From the distribution of gender in the table above, it is seen that the number of male athletes is 60%, and the number of female athletes is 40%. This suggests that there are more men included in the study. But because both genders are included, there is some extent of gender diversity which makes the findings possible to apply to both male and female sportswomen and men within the University of Port Harcourt.

Table 4.3: Frequency and Percentage Distribution of Participants' based on Level of Study (N = 20)

Level	Frequency (f)	Percentage (%)
100 Level	4	20%
200 Level	6	30%
300 Level	5	25%

Level	Frequency (f)	Percentage (%)
400 Level	5	25%
Total	**20**	**100%**

The distribution of the participants by academic level shows that 30% of the participants are in 200 level, 25% are in 300 level and 20% are in 400 level. This indicates that the majority of the participants are mid-level undergraduates, which is most likely to have just gotten used to the routines of training and life in university. Their academic experiences can also help them understand and use psychological training interventions.

Table 4.4: Frequency and Percentage Distribution of Participants' based on Training Experience (Years) (N = 20)

Experience (Years)	Frequency (f)	Percentage (%)
1–2 years	7	35%
3–4 years	8	40%
5 years and above	5	25%
Total	**20**	**100%**

The analysis of training experience reveals that most athletes (40%) have 3 to 4 years of experience, 35% 1 to 2 years and 25% at least 5 years. This means that, on average, most of the participants do not have extensive training experience, which is appropriate for the use of mental imagery and self-talk training because they are not novices, nor are they particularly elite athletes. Such experience adds to the trustworthiness of the study results.

Research Question

To what extent does mental imagery and self-talk training influence the speed of athletes in University of Port Harcourt?

Table 4.5: Mean and standard deviation summary of pre-test and post-test scores on the effect of mental imagery and self-talk training on the speed of track and field athletes in the University of Port Harcourt.

Variable	Pre-Test $\bar{x} \pm SD$	Post-Test $\bar{x} \pm SD$	Mean Difference	Remark
Speed	4.79 ± 0.04	4.52 ± 0.05	0.27	Positive effect

The table 4.10 above shows the mean and standard deviation of the pre-test and post-test scores on the effect of mental imagery and self-talk training on speed of track and field athletes in the University of Port Harcourt. The mean and standard deviation of the pre-test speed scores before the intervention were 4.79 seconds and 0.04, while the mean and standard deviation of the post-test scores after the intervention were 4.52 seconds and 0.05. The mean difference between the pre-test and post-test scores is 0.27 seconds, which signifies a positive effect. This result implies that mental imagery and self-talk training improved the sprinting speed of track and field athletes, enabling them to cover short distances in less time and enhancing overall performance.

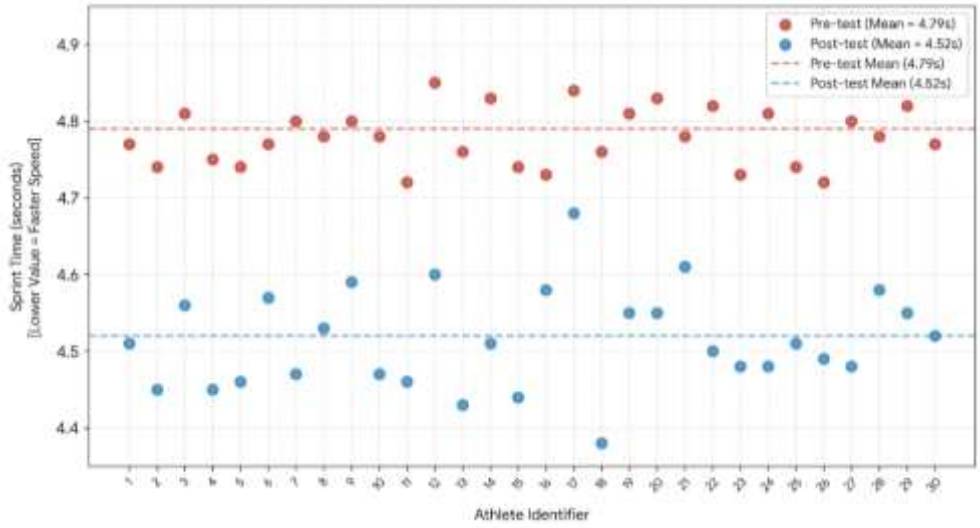


Figure 4.1: *Jittered scatter plot demonstrating the downward distribution shift in track and field athletes' short-distance sprint times (in seconds) following a psychological skills training intervention. Black markers denote group means (*4.79 ± 0.04s *versus* 4.52 ± 0.05s*), indicating a significant increase in speed.*

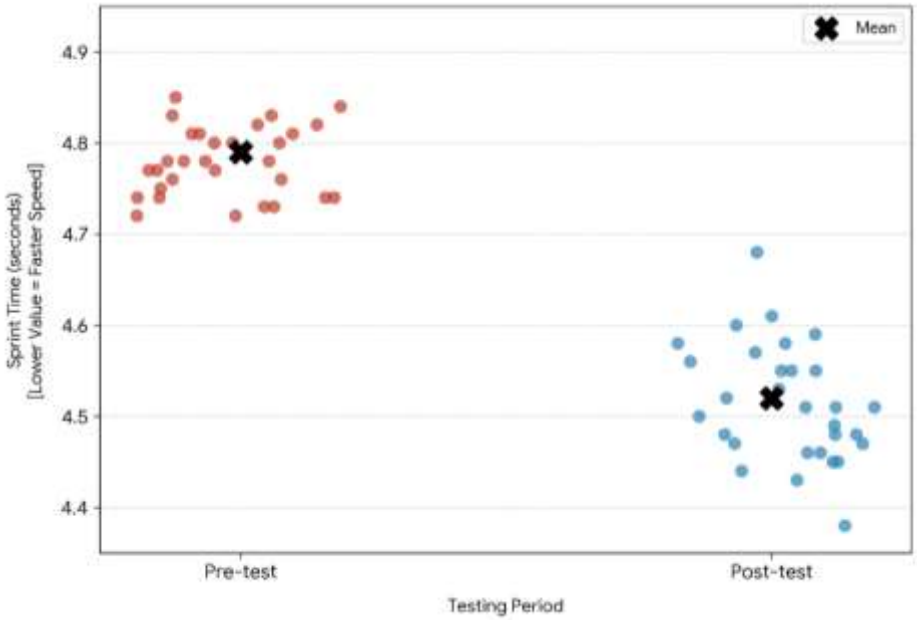


Figure 4.2: *Individual paired data tracking pre-test to post-test sprint time reductions across the study sample (N=20). Dashed horizontal baselines explicitly map a uniform net positive performance improvement of 0.27 seconds in velocity.*

The results presented in Table 4.10 reveal that mental imagery and self-talk training has the significant influence on the sprinting speed of track and field athletes at the University of Port Harcourt. The athletes' mean baseline sprint time prior to the psychological skills training was 4.79 seconds (SD = 0.04). The mean sprint time of the cohort at the end of the intervention was 4.52 seconds (SD = 0.05). This is a net decrease in travel time of 0.27 seconds, indicating a definite improvement in absolute velocity. The difference is almost three-tenths of a second in the less than three-mile track and is very real in short-distance sprinting. This improvement in performance, with tightly bound SDs across testing time (0.04s and 0.05 s), indicates a very consistent performance improvement throughout the team. The findings suggest that the structured cognitive rehearsal with positive self-talk can effectively optimize motor unit recruitment and mental focus, and allow athletes to accelerate faster and sustain higher velocities while expending less central nervous system fatigue.

Hypothesis

There is no significant effect of mental imagery and self-talk training on the speed of athletes in the University of Port Harcourt.

Table 4.6: ANCOVA Summary of Mental Imagery and Self-Talk Training Effect on Speed of Track and Field Athletes in the University of Port Harcourt

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	0.214[a]	1	0.214	10.286	0.005	0.364
Intercept	36.982	1	36.982	1776.058	0.000	0.990
Pre-Test (Covariate)	0.031	1	0.031	1.489	0.238	0.076
Treatment (Training)	0.214	1	0.214	10.286	0.005	0.364
Error	0.374	18	0.021			

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Total	452.000	20				
Corrected Total	0.588	19				

a. R Squared = 0.364 (Adjusted R Squared = 0.327)

The ANCOVA results reveal that the effect of mental imagery and self-talk training on speed is statistically significant ($F(1,18) = 10.286$, $p = 0.005$), as the p-value is less than 0.05. Therefore, the null hypothesis is rejected. This indicates that mental imagery and self-talk training had a significant effect on the speed of track and field athletes in the University of Port Harcourt. Furthermore, the partial eta squared value of 0.364 indicates a large effect size, suggesting that the intervention made a substantial contribution to improving sprinting speed. The model explains approximately 36.4% of the variance in speed performance ($R^2 = 0.364$), demonstrating that the training programme effectively enhanced athletes' ability to move faster and perform optimally in sprint-related activities.

Discussion

The mean difference in sprint time for the track and field athletes between the pre-test and the post-test of mental imagery and self-talk training was 0.27 seconds, which indicates that the training had a positive effect on their sprint time. This result is in accordance with the literature that indicates physiological (stride length, muscle strength) as well as cognitive and neuromuscular (coordination processes) factors influence sprint performance. Morin et al (2018) and Samozino et al (2019) have noted that a sprint is quicker when the athlete releases the most force and is most efficient with their body. Furthermore, the use of mental imagery can help achieve better speed of movement execution (Slimani et al., 2016), and the use of self-talk can help focus attention and improve task execution (Hatzigeorgiadis et al., 2011). These studies support the present finding as they have shown that psychological interventions can make a considerable contribution towards improving sprint performance.

The similarity between this study and previous studies can be explained by the mechanisms by which mental imagery and self-talk affect speed performance. Mental imagery can enhance motor coordination and motor execution efficiency of athletes by mentally simulating the sprinting movements, such as stride frequency, acceleration phase, and body positioning (Moran, 2018). Simultaneously, self-talk improves attentional focus, helps control arousal levels, and provides technical cues, for example, 'drive ', 'push ', or 'relax', that are essential for optimal sprinting performance (Tod et al., 2011). The overall application of these strategies is likely to have enhanced the cognitive and neuromuscular aspects of speed, which could lead to faster and more efficient movement execution. In addition, training these techniques could have reinforced neural pathways involved in quick motor reactions.

This finding is expected and has real-world implications when viewed from a critical perspective. It's not unexpected, since sprinting speed relies greatly on reaction time, coordination, and neuromuscular synchronization, which are all linked to cognitive processes. In sprint events, however, the observed 0.27-second time difference is more significant, as the difference between two times can make all the difference. This finding has implications for the traditional perspective that speed development largely depends on physical training practices like sprint drills and resistance training, and it emphasizes the need to include psychological skills in speed development programmes.

The researcher believes this is very promising and demonstrates the importance of a comprehensive training model that integrates training in both physical and psychological aspects. These findings support the enhancements in speed seen in this study, as they may be

due to increased neuromuscular efficiency, motor coordination, and attentional control. It states that mental readiness leads to better performance of the athletes' physical abilities. Thus, the findings of this study support the use of mental imagery and self-talk training in sprint training programmes, as they have a great effect on improving sprint performance amongst track and field athletes at the University of Port Harcourt.

Conclusion

The study concludes that structured mental imagery and self-talk training significantly improved the speed of track and field athletes at the University of Port Harcourt. The reduction in mean 30-metre sprint time from 4.79 seconds to 4.52 seconds and the significant ANCOVA result, $F(1, 18) = 10.286$, $p = .005$, with a large effect size (partial $\eta^2 = .364$), demonstrate the effectiveness of the intervention. The findings therefore support the integration of mental imagery and self-talk into conventional physical training programmes to enhance sprint performance.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Coaches and sport trainers at the University of Port Harcourt should integrate structured mental imagery and self-talk exercises into regular speed and track-and-field training programmes to complement physical conditioning.
2. Sport psychologists should provide systematic training in imagery and positive, event-specific self-talk to help athletes develop attentional focus, confidence, and effective mental preparation for sprint performance.
3. The Sports Institute, University of Port Harcourt, should incorporate psychological skills training into athletes' preparation for inter-university and higher-level competitions, rather than relying exclusively on physical and technical training.
4. Athletes should be encouraged to practise mental imagery and appropriate self-talk consistently during training and before competition, particularly by developing individualized performance cues that support explosive starts, acceleration, and efficient sprint execution.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the research, authorship, or publication of this article. The study was conducted independently, and no personal, institutional, or financial interest influenced the design, implementation, analysis, or reporting of the findings.

References

Hatzigeorgiadis, A., Zourbanos, N., Galanis, E., & Theodorakis, Y. (2011). Self-talk and sports performance: A meta-analysis. *Perspectives on Psychological Science, 6*(4), 348–356. https://doi.org/10.1177/1745691611413136

MacIntyre, T. E., Madan, C. R., Moran, A. P., Collet, C., & Guillot, A. (2018). Motor imagery, performance and motor rehabilitation. *Progress in Brain Research, 240*, 141–159. https://doi.org/10.1016/bs.pbr.2018.09.010

Morin, J.-B., Samozino, P., Murata, M., Cross, M. R., & Nagahara, R. (2019). A simple method for computing sprint acceleration kinetics from running velocity data: Replication study with improved design. *Journal of Biomechanics, 94*, 82–87. https://doi.org/10.1016/j.jbiomech.2019.07.020

Ochor, D. C., & Amasiatu, A. N. (2024). Psychological analysis of problems in competitive sports in Nigeria. *African Journal of Human Kinetics, Recreation and Health Studies, 2*(2), 61–81. https://doi.org/10.31920/2976-7784/2023/v2n2a4

Ochor, D. C., & Amasiatu, A. N. (2026). Mental state diagnosis and regulation for enhanced performance among athletes in University of Port Harcourt. *African Journal of Human Kinetics, Recreation and Health Studies, 4*(1).

Ochor, D. C., Amasiatu, A. N., Elendu, I. C., & John, U. B. (2024). The effect of four weeks goal-setting training programme on football passing competencies among students in Bayelsa State Sports Academy. *International Journal of Research and Innovation in Applied Science*. https://doi.org/10.51584/IJRIAS.2024.907045

Samozino, P., Rabita, G., Dorel, S., Slawinski, J., Peyrot, N., Saez de Villarreal, E., & Morin, J.-B. (2016). A simple method for measuring power, force, velocity properties, and mechanical effectiveness in sprint running. *Scandinavian Journal of Medicine & Science in Sports, 26*(6), 648–658. https://doi.org/10.1111/sms.12490

Slimani, M., Tod, D., Chaabene, H., Miarka, B., & Chamari, K. (2016). Effects of mental imagery on muscular strength in healthy and patient participants: A systematic review. *Journal of Sports Science & Medicine, 15*(3), 434–450.

Tod, D., Hardy, J., & Oliver, E. J. (2011). Effects of self-talk: A systematic review. *Journal of Sport & Exercise Psychology, 33*(5), 666–687. https://doi.org/10.1123/jsep.33.5.666

Vickers, J. N. (2016). The quiet eye: Origins, controversies, and future directions. *Kinesiology Review, 5*(2), 119–128. https://doi.org/10.1123/kr.2016-0005