

Dominant attentional style of competitive athletes who train with music

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- A Study Design
- B Data Collection
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Abstract:

Background and study Aim: The utilisation of music in sports training has been demonstrated to yield tangible benefits, with a particular emphasis placed on the significance of individual differences between athletes. The present study's cognitive objective is the knowledge about athletes' predispositions in terms of concentration during training sessions with the use of music.

Material and Methods: A total of 117 subjects (74 female and 43 male, aged 22-24 years) who engage in competitive training utilising music were examined: 55 in bodybuilding; 32 in volleyball and 30 in fitness. The Dominant Attentional Style (DAS) questionnaire was utilised in the study. The DAS comprises ten questions, with respondents being awarded 1 point for answering 'yes' and 2 points for answering 'no'. Consequently, a score ranging from 10 to 20 points can be obtained, which is interpreted as follows: a score between 10 and 13 points indicates that the respondents predominantly exhibit a dissociative style (they actively seek forms of distraction from the discomfort of heavy training). Scores falling between 14 and 16 points indicate an absence of style dominance among respondents (they are only able to derive specific benefits from music during monotonous training sessions). Scores ranging from 17 to 20 on this scale indicate a preponderance of respondents who favour an associative approach. The level of significance was set at $\alpha = 0.05$.

Results: Athletes training in volleyball were characterised by a statistically significantly lower level on the attention style scale (12.75 poi points) than fitness athletes (13.97 points) and bodybuilders (14.25 points). Taking into account the specific nature of the samples, the dissociative style was characteristic of: 75% of volleyball players, 36.4% of bodybuilders and 33.3% of fitness athletes; no dominant style was characteristic of: 25% of volleyball players, 45.5% of bodybuilders and 66.7% of fitness athletes; the associative style was characteristic of only 18.2% of bodybuilders. In the studied population of athletes, 46.2% generally exhibited a dissociative style, 45.3% had no dominant style, and 8.5% exhibited an associative style.

Conclusions: In the process of devising training programmes that incorporate music, it is essential to take into account the unique characteristics of the athletes in question, as well as the specific nature of the respective sport.

Keywords: associative style, concentration, dissociative style, sports psychology

Dictionary:

Concentration – the ability to focus and maintain awareness on a specific task, thought, object or phenomenon, while ignoring distractions [44].

Sports Psychological Tests

(SPT) – a group of tools designed for athletes to diagnose their mental level, often in combination with fitness elements [45].

Sports Psychology – a science that uses psychological theories, methods and techniques for the mental training of athletes and providing them with psychological assistance [46].

1. Introduction

The utilisation of music in conjunction with sports training is a practice that is gaining popularity, particularly among the younger athletes [1]. The utilisation of music in the training of athletes by those who favour this form of assistance has been demonstrated to result in enhanced commitment to training, reduced fatigue, improved mood and an improved sense of rhythm during exercise performance [2]. Satisfaction has been demonstrated to be particularly evident during monotonous endurance training [3]. Concurrently, the significance of conscientiously selected songs for the training playlist is underscored [4].

It is vital that the tracks are adapted to the desired rhythm of the exercises at a given stage of training [5]. It is therefore recommended that the introductory section of the composition contain a series of tracks characterised by an increase in tempo, with a corresponding enhancement in dynamic intensity from one track to the next. This approach is intended to stimulate the nervous system, as outlined in [6]. In the primary section, the utilisation of songs characterised by a consistent tempo is recommended to ensure the sustained activation of the nervous system [7]. In the final part, the tempo of the songs should be gradually decreased, with a more deliberate decline from one song to the next, in order to induce a state of calmness in the nervous system [8]. Furthermore, it is imperative that the songs are characterised by a positive tone [9]. The positive messages conveyed through the songs have been shown to engender heightened motivation and positive emotions among the subjects training [10].

Athletes of all ages and levels – school, amateur, competitive, professional – also use music before and after training, during recovery [11]. The selection of music, tailored to the individual preferences of the athlete, has been demonstrated to have a beneficial effect on stress reduction and to enhance motor task performance by increasing arousal [12]. It is therefore vital that the songs selected are ones with which the athlete is already familiar and which they find agreeable [13]. This phenomenon enables the subjects to evoke positive associations and feelings of pleasure [14]. Concurrently, the evocation of the desired stimulation through music is contingent on the appropriate volume of the tracks, thereby ensuring that the exerciser can also perceive auditory stimuli from the environment in combination with awareness [15].

Consequently, the utilisation of music in sports training programmes offers numerous advantages. However, there are training microcycles in which the use of music is not recommended [16]. This phenomenon is particularly evident in the context of athletes who are developing novel motor skills. In such training units, it is imperative that the trainees maintain maximum concentration, and music is perceived only as a distraction [17]. Additionally, music has been demonstrated to be ineffective during periods of maximal exertion, as it has been shown to hinder the optimisation of training outcomes [18]. Furthermore, there are athletes who do not favour music as a training accompaniment. This is how individual differences among people who train in sports are articulated [19].

In view of the above, the cognitive objective of this study is the knowledge about athletes' predispositions in terms of concentration during training sessions with the use of music.

2. Materials and Methods

Tested persons

The study involved 117 participants, including 74 female and 43 male subjects aged 22–24, from the following sports disciplines: volleyball (32 participants); fitness (30 participants); and bodybuilding (55 participants). Each of the sports disciplines differed in terms of the physical and mental preparation requirements. All participants engaged in competitive training in their respective sports, utilising music as a medium, and were enrolled as students at universities in Lower Silesia province, Poland.

Tool

The study utilised the Dominant Attentional Style (DAS) questionnaire to evaluate athletes' predispositions with regard to concentration during training sessions accompanied by music [20].

The DAS comprises ten questions, with respondents being awarded 1 point for answering 'yes' and 2 points for answering 'no'. Consequently, a score ranging from 10 to 20 points can be obtained, which is interpreted as follows: a score between 10 and 13 points indicates that the respondents predominantly exhibit a dissociative style, meaning that they actively seek forms of distraction from the discomfort of heavy training. Therefore, the presence of background music has been demonstrated to yield substantial advantages with regard to training benefits. Scores falling between 14 and 16 points indicate an absence of style dominance among respondents, suggesting that they are only able to derive specific benefits from music during monotonous training sessions. Scores ranging from 17 to 20 on this scale indicate a preponderance of respondents who favour an associative approach, characterised by an emphasis on regulating the body, focusing on the breath, and contemplating the form or the muscles being used. Hence, while the role of background music in enhancing training outcomes is minimal, its capacity to elevate mood is noteworthy.

In the sample of athletes studied, DAS internal consistency was achieved at a satisfactory level, with Cronbach's $\alpha > 0.7$.

Procedure

The study was conducted between September and December 2023. The inclusion criteria for subjects in the study were as follows: voluntary written consent to participate in the study and to publish the results of the study for scientific purposes, a minimum of three years of sporting experience, and membership of a licensed sports club in a Polish sports association for the sports disciplines under study.

The present study was conducted in Lower Silesian sports clubs that participated in the study. Initially, a two-hour playlist of dynamic songs was devised, with the musical preferences of the subjects taken into consideration on the basis of their verbal declarations. The playlist incorporated songs from the pop and techno genres, characterised by positive lyrics. Subsequently, the subjects participated in a 90-minute training session that incorporated music from the programmed playlist. Subsequent to the training session, the subjects completed a paper-and-pencil version of the DAS questionnaire. Subsequent to the survey conclusion, the respondents' data sheets were subjected to coding and entered into a database.

The first sample included volleyball players, the second sample included fitness athletes, and the third sample included bodybuilders. Therefore, the order of reporting the samples was identical to the order in which the samples were included³. Results.

Statistical analysis

Statistical analyses were performed using IBM SPSS Statistics 26. The software was utilised for the execution of fundamental descriptive statistics, normality of distribution assessments, one-way analysis of variance, post hoc tests with Games-Howell correction, cross-tabulation, and Fisher's exact test. The significance level was set at $\alpha = 0.05$.

The estimation of the results is based on the following indicators: frequency (N, n); mean (M); median (Me); minimum (Min); maximum (Max); standard deviation (SD or $\pm$); standard error (SE); skewness (Skew); kurtosis (Kurt.). Other symbols and statistical abbreviations: statistical significance (p); test statistic value (F); degrees of freedom (df); effect size indicator (η^2); Shapiro-Wilk test result (W); Levene's test result proved statistically significant and the result was reported with Welch's correction (a); confidence interval for the difference between means (CI); effect size index (Vc).

3. Results

The initial phase of the analysis entailed the examination of the distributions of quantitative variables. In order to accomplish this objective, fundamental descriptive statistics were computed, in conjunction with the Shapiro-Wilk test, to ascertain the normality of the distribution. The result of the Shapiro-Wilk test proved to be statistically significant, which means that the distribution of the attention scale significantly deviates from the normal distribution (Table 1). However, it should be noted that the skewness of the distribution does not exceed the conventional absolute value of 1, which means that the distribution is only slightly asymmetrical. Consequently, the analysis through the utilisation of parametric tests was undertaken.

Table 1. Basic descriptive statistics with the Shapiro-Wilk test.

Dependent variable	<i>M</i>	<i>Me</i>	<i>SD</i>	<i>Sk.</i>	<i>Kurt.</i>	<i>Min.</i>	<i>Max.</i>	<i>W</i>	<i>p</i>
Attentional styles	13.77	14.00	1.58	0.47	- 0.39	11.00	17.00	0.93	<0.001

Subsequently, a one-way analysis of variance was conducted to verify the existence of differences in attention styles depending on the type of sport trained. The analysis revealed a statistically significant difference between the groups training the sports in question in terms of attention styles. The magnitude of the observed difference between the groups was substantial (Table 2).

Table 2. Results of the analysis of variance comparing attention styles according to the sport discipline trained.

Dependent variable	Volleyball (n = 32)	Fitness (n = 30)	Bodybuilding (n = 55)	Statistical indicators			
	<i>M & SD</i>			<i>F</i>	<i>df</i>	<i>p</i>	η^2
Attentional style	12.75 ±1.19	13.97 ±1.27	14.25 ±1.67	13.49 ^a	2; 70.37	<0.001	0.16

Subsequently, post hoc tests with the Games-Howell correction were performed to compare the groups in pairs. The Games-Howell correction was employed in view of the heterogeneity of variance for attention style across the three groups. It was observed that the attention style levels of volleyball players were statistically significantly lower than those of fitness and bodybuilding athletes. The mean of 12.75 for volleyball players falls within the range that is appropriate for the dissociative attention style. The mean on the attention style scale for fitness trainers was 13.97, and for bodybuilders it was 14.25, which is a score corresponding to the lower limit of no dominant attention style (associative or dissociative). An analysis of the data set revealed no statistically significant differences between fitness trainers and bodybuilders (Table 3).

Table 3. Results of post hoc tests comparing attentional styles according to the sport discipline trained.

Dependent variable	Compared groups	Difference between M	SE	<i>p</i>	95% CI LL	95% CI UL
Attentional styles	Volleyball – Fitness	–1.21	0.31	<0.001	–1.97	–0.46
	Volleyball – Bodybuilding	–1.50	0.31	<0.001	–2.24	–0.77
	Fitness – Bodybuilding	–0.28	0.32	0.648	–1.06	0.49

LL lower limit of the confidence interval; **UL** upper limit of the confidence interval.

Following this, a cross-tabulation table and Fisher's exact test were performed to ascertain the relationship between attention styles transformed using norms (dissociative style, no dominant style, and associative style) and the sport discipline. The result of Fisher's exact test was statistically significant. The strength of the relationship was moderate. The dissociative style was found to be characteristic of 75% of volleyball players, 33.3% of fitness enthusiasts and 36.4% of bodybuilders. In 25% of volleyball players, 66.7% of fitness enthusiasts and 45.5% of bodybuilders, no dominant style was identified. The associative style was not observed among volleyball and fitness players, but was evident in 18.2% of bodybuilders. The results of the study indicated that 46.2% of the studied population of athletes exhibited a dissociative style, 45.3% demonstrated no dominant style, and 8.5% exhibited an associative style (Table 4).

Table 4. Relationship between attention styles and sports discipline.

Variable	Volleyball (n = 32)		Fitness (n = 30)		Bodybuilding (n = 55)		Total (n = 115)		Indexes	
	n	%	n	%	n	%	n	%	p	Vc
Dissociative style	24	75.0%	10	33.3%	20	36.4%	54	46.2%	<0.001	0.33
No dominant style	8	25.0%	20	66.7%	25	45.5%	53	45.3%		
Associative style	0	0.0%	0	0.0%	10	18.2%	10	8.5%		

4. Discussion

The data obtained from this study provided insight into athletes' predispositions in terms of concentration during training sessions with music. Quantitative analyses indicated that volleyball players demonstrated a predisposition towards a dissociative style of attention, which is interpreted as signifying that music played during training distracts them from the discomfort of heavy training loads [21]. Conversely, fitness athletes and bodybuilders exhibited a proclivity for a non-dominant attention style, suggesting that music during training confers only benefits when performing exercises that are subjectively perceived as monotonous [22].

An analysis of the predispositions of the subjects in percentage terms showed that 75% of volleyball players exhibit a dissociative style, while the remaining 25% have no dominant style. This finding indicates that the majority of volleyball players experience positive benefits from training in the presence of music, while a smaller proportion of players only demonstrate such benefits when performing monotonous motor tasks [23]. In the sample of fitness enthusiasts, 33.3% of individuals exhibited a dissociative style, while 66.7% did not have a dominant style. This finding indicates that a smaller proportion of fitness enthusiasts appear to derive benefits from training with music, with the majority only perceiving the advantages of music in training when performing monotonous exercises [24]. In the sample of bodybuilders, 36.4% of subjects revealed a dissociative style, 45.5% exhibited no dominant style, and 18.2% demonstrated an associative style. This finding indicates that a smaller proportion of bodybuilders experience tangible benefits from incorporating music into their training regimens. A significant proportion of respondents reported that music only had a positive impact on their training experiences for exercises they perceived as monotonous. A smaller proportion did not perceive significant benefits from music support [25].

Furthermore, within the overall group of respondents at similar levels, dissociative style predispositions and the absence of a dominant style predominate, while associative style predispositions are insignificant. This suggests that the integration of music in sports training is advantageous for the majority of respondents, as it serves as a distraction from physical discomfort or exercises that are perceived as monotonous [26]. For a minority of respondents, however, the use of music in sports training does not result in significant training benefits; nevertheless, it has been demonstrated to improve mood [27].

In this regard, it is important to note that there are no universally applicable solutions in sports psychology that can be applied to the entire population of individuals training in various sports disciplines [28]. The significance of individual variations among athletes is underscored [29]. While music is commonly employed as a medium to enhance sports training for many individuals [30], its efficacy in improving mood, at best, is more pronounced [31]. Consequently, the efficacy of bespoke mental techniques, customised to suit the individual preferences and predispositions of a given athlete, has been postulated to play a pivotal role [32].

The study utilised a two-hour playlist of energetic songs to stimulate athletes [33]. Despite the playlist having been tailored to align with the subjects' declared musical preferences, it cannot be discounted that certain songs may not have elicited the intended positive response in each individual subject [34]. Consequently, athletes' propensities for concentration during training with music are more closely associated with individual predilections than with group training [35]. Conversely, volleyball players – as the sole team sport in the sample – demonstrated that music generally facilitates their training [36]. This phenomenon may be attributed to the unique characteristics of this sport, which involves athletes engaging in musical listening during intermissions between play during matches [37], and the reactions of spectators [38]. Therefore, it was hypothesised that individual differences between athletes and the specific nature of the sport being trained are important for athletes' predispositions in terms of concentration during training with music.

An issue that is not directly related to the subject of this research is the relationship of athletes to various aspects of music in disciplines that programmatically combine training and competition activity with musical background: artistic gymnastics [39], capoeira [40], figure skating [41], sports dance [42], synchronized swimming [43].

Limitations of the study

The present study is constrained to the population of competitive athletes aged 22–24 who engage in training in volleyball, fitness, and bodybuilding. Furthermore, the DAS results were collected after a single 90-minute training session. It cannot be discounted that the DAS outcomes may have been disparate had additional training sessions incorporating musical elements been undertaken within the study.

Further research directions

It is recommended that research be continued on a larger population of athletes from as many sports disciplines as possible, while maintaining the autonomy of these disciplines when including them in samples. The implementation of this research should be undertaken during training sessions and competition situations. Furthermore, it is imperative to consider gender divisions when selecting samples from diverse sporting disciplines.

5. Conclusions

In the process of designing training sessions that incorporate music, it is essential to consider the unique characteristics of athletes and the particularities of their respective sports. As is the case with athletes, individuals vary in their preferences with regard to musical genres and songs. Furthermore, the level of stimulation desired for each sport is unique. Consequently, the efficacy of musical compositions varies according to the sporting discipline, thereby facilitating the planning of a training playlist for a single athlete as opposed to an entire team.

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References

1. Piepiora PA, Bagińska J, Piepiora ZN. Perspective on solving the problem of declining interest in physical activity in Poland. *Front Sports Act Living* 2024; 6: 1416154
2. Dyrland AK, Wininger SR. The effects of music preference and exercise intensity on psychological variables. *J Music Ther.* 2008; 45(2): 114-134
3. Lind E, Welch AS, Ekkekakis P. Do 'mind over muscle' strategies work? Examining the effects of attentional association and dissociation on exertional, affective and physiological responses to exercise. *Sports Med.* 2009; 39(9): 743-764
4. Hutchinson JC, Karageorghis CI. Moderating Influence of Dominant Attentional Style and Exercise Intensity on Responses to Asynchronous Music. *J Sport Exerc Psychol* 2013; 35(6): 625-643
5. Jones L, Karageorghis CI, Ekkekakis P. Can high-intensity exercise be more pleasant?: attentional dissociation using music and video. *J Sport Exerc Psychol* 2014; 36(5): 528-541
6. Bigliassi M. Use the brain: complementary methods to analyse the effects of motivational music. *Front Hum Neurosci* 2015; 9: 508
7. Hutchinson JC, Karageorghis CI, Jones L. See hear: psychological effects of music and music-video during treadmill running. *Ann Behav Med.* 2015; 49(2): 199-211
8. Silva AC, Ferreira SDS, Alves RC et al. Effect of Music Tempo on Attentional Focus and Perceived Exertion during Self-selected Paced Walking. *Int J Exerc Sci.* 2016; 9(4): 536-544
9. Nikol L, Kuan G, Ong M et al. The Heat Is On: Effects of Synchronous Music on Psychophysiological Parameters and Running Performance in Hot and Humid Conditions. *Front Psychol.* 2018; 9: 1114
10. Kuan G, Morris T, Kueh YC et al. Effects of Relaxing and Arousing Music during Imagery Training on Dart-Throwing Performance, Physiological Arousal Indices, and Competitive State Anxiety. *Front Psychol.* 2018; 9: 14
11. Gabana NT, Hutchinson J, Beauchemin J et al. A Qualitative Investigation of Music Use among Amateur and Semi-Professional Golfers. *Sports* 2019; 7(3): 60
12. Rasteiro FM, Messias LHD, Scariot PPM et al. Effects of preferred music on physiological responses, perceived exertion, and anaerobic threshold determination in an incremental running test on both sexes. *PLoS One* 2020; 15(8): e0237310
13. Delleli S, Ouergui I, Ballmann CG et al. The effects of pre-task music on exercise performance and associated psychophysiological responses: a systematic review with multilevel meta-analysis of controlled studies. *Front Psychol.* 2023; 14: 1293783
14. Lu L, Tao M, Gao J et al. The difference of affect improvement effect of music intervention in aerobic exercise at different time periods. *Front Physiol.* 2024; 15: 1341351
15. Moore AR, Hutchinson JC, Winter C et al. Music alters heart rate and psychological responses but not muscle activation during light-intensity isometric exercise. *Sports Med Health Sci.* 2024; 6(4): 394-401
16. Cotellessa F, Bragazzi NL, Trompetto C et al. Improvement of Motor Task Performance: Effects of Verbal Encouragement and Music-Key Results from a Randomized Crossover Study with Electromyographic Data. *Sports* 2024; 12(8): 210

17. Delleli S, Ouergui I, Messaoudi H et al. Combined effects of low-dose caffeine and warm-up music enhance male athletes' performance in simulated Taekwondo combat: a double-blind, randomized crossover trial. *Psychopharmacology* 2025; 242(8): 1845-1858
18. Ketelhut S, Brand R, Martin-Niedecken AL et al. Sounds and Sights of Motivation: Using Digital Encouragement and Dissociation Strategies during Cardiopulmonary Exercise Testing To Improve Patient Engagement and Diagnostic Quality. *Sports Med Open* 2025; 11(1): 43
19. Bougrine H, Paillard T, Jebabli N et al. Ergogenic Effects of Combined Caffeine Supplementation and Motivational Music on Anaerobic Performance in Female Handball Players: A Randomized Double-Blind Controlled Trial. *Nutrients* 2025; 17(10): 1613
20. Karageorghis CI, Terry PC. *Inside Sport Psychology*. Champaign, IL: Human Kinetics; 2011
21. Arazi H, Asadi A, Purabed M. Physiological and psychophysical responses to listening to music during warm-up and circuit-type resistance exercise in strength trained men. *J Sport Med* 2015; 3: 389831-389836
22. Ballmann CG, McCullum MJ, Rogers RR et al. Effects of preferred vs. nonpreferred music on resistance exercise performance. *J Strength Cond Res* 2021; 35(6): 1650-1655
23. Ballmann CG. The influence of music preference on exercise responses and performance: a review. *J Funct Morphol Kinesiol* 2021; 6(2): 33
24. Köse B. Does motivational music influence maximal bench press strength and strength endurance? *Asian J Educ Train* 2018; 4(3): 197-200
25. Bartolomei S, Di Michele R, Merni F. Effects of self-selected music on maximal bench press strength and strength endurance. *Percept Mot Skills* 2015; 120(3): 714-721
26. Terry PC, Karageorghis CI, Curran ML et al. Effects of music in exercise and sport: a meta-analytic review. *Psychol Bull* 2020; 146(2): 91-117
27. Waszkiewicz E, Bąk R. An innovative method of monitoring health, mental, motor and artistic indicators during violin lessons. *Arch Budo J Inn Agon* 2024; 20: 318-332
28. Lochbaum M, Stoner E, Hefner T et al. Sport psychology and performance meta-analyses: A systematic review of the literature. *PLoS One* 2022; 17(2): e0263408.
29. Reardon CL, Hitchcock M. Mental health in individual versus team sports. *Int Rev Psychiatry* 2024; 36(3): 284-295
30. Cutrufello PT, Benson BA, Landram MJ. The effect of music on anaerobic exercise performance and muscular endurance. *J Sports Med Phys Fitness* 2020; 60(3): 486-492.
31. Peluso MA, Guerra de Andrade LH. Physical activity and mental health: the association between exercise and mood. *Clinics* 2005; 60(1): 61-70
32. Greco F, Grazioli E, Cosco LF et al. The effects of music on cardiorespiratory endurance and muscular fitness in recreationally active individuals: a narrative review. *PeerJ* 2022; 10: e13332
33. Chair SY, Zou H, Cao X. A systematic review of effects of recorded music listening during exercise on physical activity adherence and health outcomes in patients with coronary heart disease. *Ann Phys Rehabil Med* 2021; 64(2): 101447
34. Feiss R, Kostrna J, Scruggs JW et al. Effects of music tempo on perceived exertion, attention, affect, heart rate, and performance during isometric strength exercise. *J Sports Sci* 2021; 39(2): 161-169
35. Bigliassi M, Karageorghis CI, Bishop DT et al. Cerebral effects of music during isometric exercise: an fMRI study. *Int J Psychophysiol* 2018; 133: 131-139
36. Köse B, Atli A. Effect of different music tempos on aerobic performance and recovery. *Prog Nutr* 2019; 21(4): 922-927
37. Patania VM, Padulo J, Iuliano E et al. The psychophysiological effects of different tempo music on endurance versus high-intensity performances. *Front Psychol* 2020; 11: 74
38. Silva NRDS, Rizardi FG, Fujita RA et al. Preferred music genre benefits during strength tests: increased maximal strength and strength-endurance and reduced perceived exertion. *Percept Mot Skills* 2021; 128(1): 324-337
39. Steinberg N, Elbaz L, Dar G et al. Physiological Characteristics of Young (9-12 Years) and Adolescent (≥ 13 Years) Rhythmic, Acrobatic, and Artistic Female Gymnasts. *Sports Health – A Multidisciplinary Approach* 2025; 17(6): 1132-1139
40. Litwiniuk A, Waszkiewicz E, Bąk R. Prophylactic and therapeutic effect of combining music with martial arts: a systematic review of literature. *Arch Budo* 2021; 17
41. Freund B, Mohnhey G. Elite Figure Skaters Return to Sport Strategy Following Sports-Related Concussion: A Clinical Commentary. *International Journal of Sports Physical Therapy* 2025; 20(8): 1256-1271

42. Sedlak SV, Sebens R. Perceived Stress and Coping Strategies in Dancesport. *Journal of Dance Medicine & Science* 2025 (Early Access)
43. Palermi S, Brugin E, Schiavon M et al. Sport-related pneumomediastinum in a synchronized swimmer: from diagnosis to return to play. *Physician and Sportsmedicine* 2025; 53(2): 83-89
44. Gülsoy H, Erhan SE. An examination of the attention and psychological skill levels of combat athletes. *Avrasya Spor Bilimleri ve Eğitim Dergisi* 2024; 6(2): 316-332
45. Piepiora PA, Jurczyk JB, Vveinhardt J. Mental preparation of karateka for sports competition in kata. *Front Sports Act Living* 2025; 6: 1525853
46. Annett J. Sports psychology. *J Sports Sci* 1991; 9(1): 1-2

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