

# PROPOSAL OF PSYCHOLOGICAL PREPARATION IN ARTISTIC GYMNASTICS

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*Review article*

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## **Abstract**

*The athletes' psychological preparation constitutes part of the whole athletic preparation. However, the implementation of psychological skills training programs to gymnasts is rather limited and has a vague outcome. The purpose of the present paper was to make a proposal with the aim to assist the development of psychological skills training programs in artistic gymnastics. This proposal maintains that such a program should have the following objectives: (1) reinforcement of inner motives, such as volition, (2) avoidance of negative feelings, such as fear, and (3) implementation of a series of other practices discussed in the paper.*

**Key words:** *Artistic gymnastics, psychology, training.*

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## **INTRODUCTION**

Psychological preparation, or psychological skills training (PST) as it is also called, constitutes part of the whole process followed by an athlete during his/her athletic preparation. This is realized along with physical and technical preparation, although several viewpoints maintain that the best time to implement such a program is off-season or preseason (Weinberg & Williams, 2001).

Psychological preparation, nowadays, constitutes an integral part of any sport program that aims to the applicable athletes' preparation for the achievement of high performance (Singer & Anshel, 2006a, b). Indeed, the importance of PST in the development of athletic performance is widely acknowledged, and the number of athletes implementing psychological training strategies is increasing (Birrer & Morgan, 2010). The significance of PST is attributed to the fact that all participants in

sports fall victim to mental letdowns and mistakes (Weinberg & Gould, 2003).

As cited in Lidor, Blumenstein and Tenenbaum (2007, p. 140) "The objective of the psychological preparation is to provide the athlete with psychological techniques which can help him or her to overcome psychological barriers, such a high level of anxiety, lack of motivation, lack of attention-focusing, or difficulty in recovering from injury" (Bull, Albinson, & Shambrook, 1996; Clarkson, 1999; Hardy, Jones, Gould, 1996; Moran, 2004). In addition, Weinberg and Gould (2003) reported that "Psychological skills training" refers to the systematic and consistent practice of mental or psychological skills for the purpose of enhancing performance, increasing enjoyment, or achieving greater sport and physical activity self-satisfaction" (p. 242).

In literature, a whole series of PTS proposals is included, yet there is no definite

answer as to what a PST program should include or in what sequence these skills should be taught (Weinberg & Williams, 2001). According to Birrer and Morgan (2010), some authors maintain the simultaneous or alternate use of the phrases “psychological skills” and “psychological methods”. On the contrary, Vealey (1988) underlined the necessity to distinguish between psychological skills and psychological methods. The same author maintained that skills are qualities to be obtained; methods are procedures or techniques employed to develop these skills.

In an effort to establish an applicable PST program, Vealey (1988) determined a set of skills as foundation skills (volition, self-awareness, self-esteem and self-confidence), the qualities of which are basic and necessary to psychological skills; while as foundation methods (physical practice and education) he determined those that can be used to develop and enhance psychological skills. Research supports the maintenance that the above mentioned skills are acquired and developed through educational intervention experiences via the PST program (Vealey, 1994; Weinberg & Comar, 1994) and natural learning experiences (Gould, Dieffenbach, & Moffet, 2002; Hanton & Jones, 1999; Weiss, 1991).

Gymnastics is an environment in which several PST strategies (e.g., Salmela, 1989) have already been tried; yet their number is limited. Two recent studies, on elite female gymnasts aged 12, used different 10-month PST programs. The first study made use of teaching relaxation, self-talk, goal setting, focusing and visualization (Fournier, Calmels, Durand-Bush, & Salmela, 2005) as intervention techniques; while the second study used: (a) foundation skills (goal-setting, self-confidence, commitment), (b) psychosomatic skills (stress reactions, relaxation, activation, and (c) cognitive skills (imagery, mental practice, focusing, refocusing, and competition planning) (Calmes, d’Arripe-Longueville, Fournier, & Soulard, 2003).

Gymnastics is an individual sport in which performance is the outcome of a,

mainly, individual effort. This leads us to the hypothesis that performance, apart from the physical and technical preparation, can be also the outcome of psychological competences, on the basis of which one can make decisions based on conscious urges (inner motives), for example volitional competence. Weinberg and Williams (2001) supported that “without an individual’s desire to achieve success, there is little hope that any psychological skills program would be successful because it takes commitment to practice the skills and carry out the program” (p. 363). Gymnastics is, also, a sport causing intense emotional arousal, for example the feeling of fear, in which case the avoidance of such feelings is sought. Furthermore, it is considered that high performance level is a matter of being acquainted with the conditions prevailing in the games. Thus, this necessitated the usage of a series of other practices, within the framework of a PST program.

In brief, it could be claimed that the implementation of PST programs to gymnasts is limited and in many cases it is accompanied by inadequate results. The purpose of the present paper is – on the basis of the already existing considerations on PST – to make a proposal for the development of relevant programs, with the aim to improve the gymnasts’ psychological skills. This proposal maintains that in order to achieve maximum performance, a set of psychological functions plays a pivotal role; these functions are (1) the reinforcement of inner motives, such as volition, (2) the avoidance of negative feelings, such as fear, and (3) a whole range of other practices discussed below.

### **1. Reinforcement of inner motives – Volition**

The term “motive” refers to specific conditions which activate individual behaviors and direct orientation towards an aim, while being of different origin – either intrinsic or extrinsic (Papadopoulos, 2005). Intrinsic motivation relates to emotions and the deeper or actual satisfaction of the

individual, concerning the goals he/ she sets (e.g., delivery of a painful – for him/ herself – physical activity) or fully accepts, while extrinsic motivation relates to extrinsic rewards from the others.

Above, volition competence was referred to as an inner motive determining the individual's behavior. The term *volition* generally means the “competence” which exists as a basis of a conscious action and, more specifically, one's ability to make a decision based on conscious urges concerning a specific behavior. Volition can be considered the “competence” of an individual to be committed to a goal – chose on his/ her own – and coordinate all his/ her forces in order to achieve such goal. For example, in sports each athlete is characterized by achievement goal-setting. The ability to achieve the goals set, regardless of any obstacles present, characterizes the extent of the athlete's volition.

#### *Qualities of volition*

Volition is described as a psychic phenomenon (Sechenov, 1952, as cited by Ryba, Stambulova, & Wrisberg, 2009), the function of which is expressed by a set of further functions called volitional qualities. These qualities are manifested comprising at the same time all three components of volition (cognitive, affective, and operational component). Puni (1977) mentions purposefulness, persistence and perseverance, decisiveness and courage, initiative and independence, and self-control and composure as qualities of volition.

In additions, it should also be noted that volitional qualities do not act separately from each other but in an interactive fashion (Ryba et al., 2009). Ryba and colleagues maintained that any particular structure of volitional qualities is determined by the stable and objective conditions of the specific activity and actions in questions; for example, in the sport by the relatively stable and objective conditions of the particular sport. More specifically as concerning gymnastics, the two researchers determined

as central components composure and self-control.

#### *The value of Volition*

Psychologists have expressed several viewpoints on the function of volition in human behavior related with performance. A viewpoint, as already mentioned, is the one which considers volition a psychic phenomenon that directs goal-oriented behavior, particularly in adverse conditions. Ryba et al. (2009), based on the above mentioned view, determined volition as an active side of the mind and moral feelings and one of the functions of a normally working brain that enables an individual to self-control and regulate, especially when overcoming obstacles of varying degrees of difficulty (p. 278). Kelleman, Bussmann, Anders, and Schulte (2006) maintained the usage of volitional skills, for example in order to overcome fatigue, as well as keeping the pace when tired, aiming at the achievement of a high performance level. Bembenutty and Karabenick (1998) maintain that volitional skills direct individuals' dispositions to postpone immediate rewards in order to gain larger rewards temporally distant. There is empirical evidence indicating that the use of volitional strategies is related to decreased delay of gratification, increased effort, and better time and study management (Bembenutty, Karabenick, McKeachie, & Lin, 1998).

According to Ryba et al. (2009) the assessment of volition as a psychic phenomenon enables better understanding the structure of volitional manifestations of personality, with each manifestation comprising intellectual (cognitive), affective (motivational) and operational components (skills). Corno and Kanfer (1993) have emphasized that appropriately applied volitional control helps students to study by regulating cognitive, motivation, and affective processes around challenging goals.

Another prevailing point of view concerning volition is that it constitutes a part of a broader self-regulatory system that involves motivation as well as volition

(Corno & Kanfer, 1993). Self-regulation skills have been shown to be related to sport performance (Barkhoff, 2000; Beckmann, 2001; Beckmann & Kazen, 1994; Kane, Baltes, & Moss, 2001; Mahoney & Avenier, 1977; Singer, 2002; Van Ralte & Brewer, 1996). Elbe, Szymanski and Beckmann (2005) report that “volition is a construct from motivation psychology that describes the processes and mechanisms of self-regulation and is commonly referred to as the ‘will’” (p. 560). The role of volition in the mechanism of self-regulation is understood by examining the predecisional (cognitive activities involved in making decisions and setting goals) and prodecisional (activities engaged in after goal setting) processing. More specifically, predecisional analyses involve decision making and are motivational; while postdecisional analyses deal with implementing goals and are volitional (Schunk & Zimmerman, 2003). This reveals that volition mediates the relation between goals and actions and helps learners accomplish their goals. For example, an individual’s involvement in sport is a decision motivated by circumstantial factors (e.g., parents, coaches), while performance in sport is a matter in which the individual’s volition plays a pivotal role.

Self-regulation is maintained to be a broader process which encompasses activities before, during and after (Zimmerman, 2000); while volition may be the aspect of self-regulations that occurs during performance (Schunk & Zimmerman, 2003). However, the significance of volition in improving the performance lies in the fact that it comprises a set of psychological control process that protect one’s concentration and direct effort in the face of obstacles and distractions (Corno, 1993).

In brief, it could be maintained that the value of volition lies in the following:

- It fosters an optimistic attitude towards sports, as even hardships seem like necessary transitional periods.

- It accumulates all individual’s strengths enabling thus exceptional performances in sport.

- It leads the individual to freedom, independence and self-awareness.

- It contributes to goal achievement.

- It attributes to the individual the athlete’s psychology.

#### *Development of Volitional Competences*

The development of volitional competences, as an aspect of psychological preparation, is one of the fundamentals of training process and is realized along with the other aspects of training (physical, technical and tactical preparation). Psychologists support that optimum volitional functioning is an emergent property of synergies between individual and the situation (e.g., Bandura, 1986). This means that the training habits and styles that mark volition can be seen in strategies efforts by athletes to accomplish self-reliantly the various tasks that training presents. According to Kuhl and Fuhrmann (1998) the development of volition takes place throughout life, however with its most striking features being evident during childhood and adolescence (Elbe et al., 2005).

Puni (1971, 1977), in an effort to establish a conceptual model of volitional preparation in sport, considered that volition relates not only to the motor elements of athletic behavior but also to the cognitive and emotional elements as well. For this reason, he underlined the development of cognitive, emotional and operational elements of volition within a broad range of sport and life situations, beginning in the early stages of an athlete’s career.

Gymnastics as a sport comprises a whole range of special features. For example, the individual character of this sport gives it some intense cognitive (e.g., learning), emotional (e.g., fear) and operational (e.g., decision-making) components. Thus, such features can be distinguished, depending on their significance, in primary volitional qualities,

such as persistence, purposefulness and expedience, and in secondary qualities such as courage, inventiveness, and initiative. Below, a way to develop volitional qualities in the training of gymnastics is proposed, based on the above mentioned considerations.

*Primary volitional qualities:*

**Persistence:** Persistence is the individual's steady and continuous effort to achieve a goal, even in case several difficulties, problems or obstacles are encountered. According to Bandura (1986) persistence is endurance, or the refusal to give up, especially when faced with opposition.

The value of this skill is that it strengthens volition, renders the individual addicted to hard-working and increased efforts, while it also contributes to overcoming all difficulties.

*Implementation:* In order to develop persistence, it is necessary to create the applicable conditions (difficulties) for its manifestation, such as:

- To increase the work volume during training.
- To execute the exercises when already tired.
- To execute the same exercises under competitive conditions (e.g., presence of spectators, individual performance, competition under assessment).

**Purposefulness:** Purposefulness is the quality of the individual who does not hesitate to make decisions and realize them. This skill concerns the ability to make a decision and the consequent behavior – that is the persistence to realize a decision made. For example, the athlete's performance of exercises despite any plausible difficulties entailed.

The value of this skill lies in the fact that it increases energy, fosters independence, strengthens volition, contributes to the development of courage and increases optimism.

*Implementation:* Here also applies the same principle, as that in the case of the skill of persistence. More specifically,

during training conditions are created (difficulties) in order to manifest purposefulness.

Such conditions could be the following:

- Intervention of contingencies in the execution of exercises.
- Execution of exercises with the risk of falling down.
- Execution of new exercises under competitive conditions.
- Intervention of conflicting conditions in training, which require fast and accurate solutions.

**Expediency:** Expediency is the action serving some purpose, or is willful. For example, in gymnastics this skill is characterized by the clarity of the athlete's goals and tasks, the plan on the basis of which the athlete regulates his/ her activities and behaviors, as well as the focusing of the target on achieving a score.

The value of this skill lies in the fact that it creates goals while directing efforts and attention.

*Implementation:* To improve this skill, the following are suggested:

- The athletes, during training, should anticipate specific issues concerning exercises, programs, etc.
- The athletes who are to enter the competition should plan their own preparation in specific training.
- To have the programs of the athletes who are to enter the competition – or their co-athletes or even of the athletes of other teams – analyzed.

*Secondary volitional qualities:*

**Courage:** Courage is one's ability to anticipate situations with calmness and objectivity, this means without any fear, unrealistic thoughts or calculations, and at the same time with determination and intense hope for a positive outcome and success (Papadopoulos, 2005). Raatma (2000) maintains that courage is the strength to do the right thing even if it is hard.

The value of this skill lies in the fact that it contributes to the improvement of performance in gymnastics, as without it the several (difficult, dangerous) exercises

could not be successfully executed. More specifically, courage helps the individual overcome obstacles, provides the necessary courage and inner strength, stability and ongoing effort, as well as the necessary optimism, and meeting of objectives.

**Inventiveness:** Inventiveness is a mental ability by means of which the individual makes new and original thoughts and expressions or combinations of things; for example, in gymnastics, devising an execution in order to continue a program after an unexpected interruption.

The value of this skill lies in the fact that it fosters imagination and creativity, improves inspiration, while it also develops ingenuity and resourcefulness.

**Initiative:** Initiative is the decision making and performance of activities related to personal volition, this means without the intervention of any external influences or urges (e.g., from coaches, parents).

The value of this skill lies in the fact that it increases the individual's imagination, ingenuity and creativity, strengthens the individuality and volition, shows self-confidence, reveals confidence in human powers, leads the individual to overcome obstacles and difficulties, while it also sets new problematic. Furthermore, it is a necessary development factor, which combats uniformity and massiveness, contributing to action and effort to win competition.

*Implementation of secondary volitional qualities:* Briefly, for the development of the above mentioned secondary volitional qualities, the following are necessary:

- To organize training sessions in different settings (classrooms, apparatuses, different arrangement of apparatuses, etc.).
- To have programs and combinations of programs executed towards both directions with a different arrangement of the apparatuses.
- To use competition during training, depending on the requirements of the competition to come, aiming to better execution of exercises, etc.

- To include model training in the whole training course.
- To participate in demonstrations.

## 2. Avoiding negative emotions

Gymnastics is an environment that causes intense mental stimulation of both positive (e.g., enjoyment) and negative emotions (e.g., stress and anxiety). Researchers in sport and exercise have recognized that emotional experiences influence social relations, performance, etc (e.g., Solomon, 2003; Treasure, 2001; Vast, Young, & Thomas, 2010). Within the framework of negative emotions, athletes are called to anticipate mental (e.g., worry, fear) and physical difficulties (e.g., injury). Chase, Magyar, and Drake (2005) maintained that the sport of gymnastics is known to place mental and physical demands on the athlete.

Among the negative emotions that constitute a serious obstacle to the gymnasts' training are the reactions due to fear. *Fear* is the emotion deriving from a real or imaginary danger. Gullone and King (1997) describe fear as a state of being apprehensive or scared when one is presented with real or potential threat. Research has revealed that the fear of physical injury seems constitutes a common source of worry, even a possible reason for leaving the sport, among highly competitive gymnasts (Duda, 1995; Duda & Gano-Overway, 1996; Klint & Weiss, 1986; Weiss, Wiese, & Klint, 1989).

Causes for the activation of the emotion of fear can be considered the *body* (fall, injury), the *environment* (other others' reactions), the *memory* (acknowledgement and recall of past events) and the *imagination* (thinking in terms of pictures of past events). Caine, Caine and Linder (1996), and Kerr and Minden (1988) underlined the significance of difficulty to perform skills of high intensity and high volume of training in the establishment of a risk for the gymnasts, as well as an eventual injury. According to Bandura (1997) fear of injury may be present when a gymnast has

lost confidence in her ability to perform successfully in threatening or taxing circumstances.

Fear of injury can produce detrimental influences on a gymnast's performance and self-confidence in gymnastics (Magyar & Chase, 1996). In addition, perceptions of fear have the potential to disrupt attention and ultimately hinder the athlete's future performances (Bandura, 1990, 1997; Feltz, 1982; Heil, 1993, 2000).

### ***Avoiding fear***

To avoid the reactions of fear and – what's more – its negative effect, two forms of fear avoidance strategies are proposed. The first one comprises implementation in the context of learning new exercises, while the second one entails the use of psychological skills.

*More specifically, in the first form of strategy the following are proposed:*

- To execute specific preparatory exercises for the faster and economical learning of motor habits.
- To pay attention to the risk, which is latent in the new exercises, so as to significantly reduce fear.
- To start individual execution as early as possible.
- To keep assistance in learning a new exercise to a minimum.
- To estimate the execution time of a program or a combination of exercises.

The development of the athlete's ability to *estimate time*, this means to estimate and differentiate the execution time of a combination or a program of exercises constitutes one of the most significant components of training. To achieve this, the following are necessary:

- This specific combination or program to be represented.
- A verbal report on the duration of part or the entire program – specifically concerning the apparatuses of floor in both males and females and the balance beam for females – to be provided.

- Continuous feedback from the coach, during the execution of a program or its parts, to be provided.

- The decrease or increase of the duration of a program to be attributed to specific issues.

*While, in the second form of strategy the following are proposed:*

- To pay substantial attention to the control of functions such as the gymnasts' *concentration* before a competition or combination or an exercise. Concentration is the ability to maintain focus on relevant environmental cues (Weinberg & Gould, 2003). Moran (2004) supports that concentration refers to a person's ability to exert deliberate mental effort on what is most important in any given situation. The effective concentration enables athletes to apply appropriate attention to internal and external cues in the sporting arena. A recent research conclusion demonstrates that participants benefited from exposure to concentration-enhancing skills training (Sheard & Golby, 2006).

### *Implementation*

In order to enable focusing on a specific situation (e.g., the execution of a program) the following are considered necessary:

- To regulate the issue of attention for each performer individually. For example:
  - The points to which they should pay attention during the execution.
  - Whether they have to pay attention during one or more points of the execution.
- Each performer to be introduced with specific issues beforehand, while focusing (in the training or the competition).
- Each performer to repeat the execution of a program before the competition or the training session. "Dress rehearsal". Dress rehearsal is a rather effective strategy to keep concentration for sports such as gymnastics (Schmid, Peper, & Wilson, 2001). Dress rehearsal is based on the concept that ease in skillful competitive performance is unconsciously conditioned by external and internal stimuli that around athletes during practice.
- Stopping action: this way a negative thought can change into a positive one

(Zinsser, Bunker, & Williams, 2001). According to Sheard and Golby (2006) removing negative thoughts often makes it possible to break the link that leads to negative feelings and behaviors.

- Furthermore, other psychological skills proposed for the gymnasts to overcome their fear are relaxation, imagery and positive self-talk (Magyar & Chase, 1996), and visualization (Mahoney & Avenier, 1977; White & Hardy, 1998).

### 3. Other practices

Apart from the development of volitional competence and learning to avoid negative emotions, during the gymnasts' psychological preparation significant should be also a set of practices, such as adaptive (model) as well as approved trainings.

#### *Adaptive trainings*

The use of adaptive workouts in gymnastics can start rather early before the official competition and continue even after the completion of the latter. Adaptive trainings approach the conditions of the competition to come. Through these trainings, the maximum adaptation of the gymnast's potential is achieved. The more comprehensively and applicably organized these sessions the calmer are the gymnasts on entering the competition.

#### *Structure of adaptive trainings:*

*Warm up.* Warm up should correspond to the time and content of the warm-up before the competition. It starts 1-1.30 hour before the competition and is called "general". After the execution of general exercises (e.g., running, stretching and dynamic exercises), task-specific warm up follows, as well as a "walk" to the apparatuses. During the specific warm-up the number of contacts with the apparatus, as well as the number of exercises depend of the gymnasts' level, their general preparation and the general difficulty of the programs they execute. Some are used to execute whole programs of exercises – it is an individual choice.

*Competitive part.* The competitive part starts with the gymnasts' entrance parade onto the floor, accompanied by music, for the warm up. Each group of gymnasts stops in front of an apparatus and on a sound signal the actual warm up starts. Each gymnast has about 30 seconds to execute either a couple of contacts, or the whole program.

The gymnasts' assessment is performed as in the case of the official competition, by judges. The effect of training is positive, despite the fact that each session starts with a different apparatus. Furthermore, in adaptive trainings some additional conditions – such as adequate lighting of the room, the suit, the decor of the room, the presence of the spectators, the noise, etc. – should also be taken into account. Finally, a fundamental condition to be included in the adaptive workouts is the independent execution of programs without the coaches' instructions or assistance.

#### *Approved trainings*

Approved trainings are those performed in the room and on the "podium" of the official competition.

#### *Organization of approved trainings:*

Their organization is based on the schedule (plan) predetermined (technical meeting). The issues concerning the approved trainings are the following: being acquainted with the conditions of the competition, testing of apparatuses and modeling the competition.

The gymnasts enter the gym 1-1.30 hours before the competition for the general and task-specific warm-up. On entering the podium, warm-up starts. They have 30 minutes to complete this phase. During this period, they execute several exercises and combinations of exercises.

Approved trainings are significant because: they simulate the actual competition conditions, the arrangement of the apparatuses is apprehended and the competitors' status is comprehended. In these workouts, the athletes should be aware of the following: the sequence of execution in each apparatus and the content of the

training itself (number of contacts, execution of individual exercises or combinations of exercises). Moreover, another set of organizational issues should also be settled, namely: who and in what way will help the coaches; who will adjust the apparatuses; who will place the board; who will announce the vault number; who will carry the performers' clothes.

#### *Tactics of approved trainings*

The tactics of the approved trainings entails the following:

- The performers should give the impression that they are sure as concerns the execution.
- To execute separately the difficult or original exercises – even if they are not included in the competition.
- Some of the above mentioned exercises could be executed in the competition as well.
- To show maximum correlation of difficulty, style and confidence.
- To execute the exercises with calm and confidence.
- To eliminate any failed attempts and repeated executions due to failure.
  - This requires the pre-determination of the training content.
  - The impression of confidence concerning the execution of an exercise should be created to the judges, as it constitutes a fundamental issue in the final assessment.
  - During the approved workout, the fully acquainted exercises should be executed with confidence.

## REFERENCES

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1990). Perceived self-efficacy in the exercise of personal agency. *Journal of Applied Sport Psychology*, 2, 128–163.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.

Barkhoff, H. (2000). *Handlungskontrolle und selbstkonzept(e) von hochleistungssportlern im roll- und eiskunstlauf in trainings- und wettkampfsituationen* [Action control and self concept(s) of top level roller and figure skaters in training and competition]. Egelsbach: Hänsel-Hohenhausen.

Beckmann, J. (2001). Self-regulation of athletic performance. In N. J. Smelser & P. B. Baltes (Eds.), *International encyclopedia of the social and behavioral sciences* (pp. 14947-14952). Amsterdam: Elsevier.

Beckmann, J., & Kazén, M. (1994). Action and state orientation and the performance of top athletes. In J. Kuhl & J. Beckmann (Eds.), *Volition and personality: Action and state orientation* (pp. 439-451). Seattle: Hogrefe.

Bembenutty, H., & Karabenick, S. A. (1998). Academic delay of gratification. *Learning and Individual Differences*, 10, 329-346.

Bembenutty, H., Karabenick, S. A., McKeachie, W., & Lin, Y.G. (1998). *Academic delay of gratification as a volitional strategy*. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.

Birrer, D., & Morgan, G. (2010). Psychological skills training as a way to enhance an athlete's performance in high-intensity sports. *Scandinavian Journal of Medicine Science of Sports*, 20(2), 78-87. doi: 10.1111/j.1600-0838.2010.01188.x

Bull, S. J., Albinson, J. G., & Shambrook, J. (1996). *The mental game plan: Getting psyched for sport*. Brighton, UK: Sports Dynamic.

Burton, D. (1989). Winning isn't everything: Examining the impact of performance goals on collegiate swimmers' cognitions and performance. *Sport Psychologist*, 3, 105-132.

Caine, D. J., Caine, C. J., & Linder, K. J. (1996). *Epidemiology of sports injuries*. Champaign, IL: Human Kinetics.

Calmels, C., D'Arripe-Longueville, F., Fournier, J. F., & Soulard, A. (2003). Competitive strategies among elite female

gymnasts: An exploration of the relative influence of psychological skills training and natural learning experiences. *International Journal of Sport & Exercise Psychology*, 1, 327-352.

Chase, M. A., Magyar, T. M., & Drake, B. M. (2005). Fear of injury in gymnastics: Self-efficacy and psychological strategies to keep on tumbling. *Journal of Sports Sciences*, 23, 465-475. doi: 10.1080/02640410400021427

Clarkson, M. (1999). *Competitive Fire*. Champaign: Human Kinetics.

Corno, L. (1993). The best-laid plans: Modern conceptions of volition and educational research. *Educational Researcher*, 22, 14-22.

Corno, L., & Kanfer, R. (1993). The role of volition in learning and performance. *Review of Research in Education*, 19, 301-341.

Duda, J. L. (1995). Level of competitive trait anxiety and sources of stress among members of the 1993 TOP team. *Technique*, 16, 10 - 13.

Duda, J. L., & Gano-Overway, L. (1996). Anxiety in elite young gymnasts: Part II. Sources of stress. *Technique*, 16, 4-5.

Elbe, A. M., Szymanski, B., & Beckmann, J. (2005). The development of volition in young elite athletes. *Psychology of Sport and Exercise*, 6, 559-569. doi: 10.1016/j.psychsport.2004.07.004

Feltz, D. L. (1982). Path analysis of the causal elements in Bandura's theory of self-efficacy and an anxiety-based model of avoidance behavior. *Journal of Personality and Social Psychology*, 42, 764-781.

Fournier, J. F., Calmels, C., Durand-Bush, N., & Salmela, J. H. (2005). Effects of a season-long PST program on gymnastic performance and on psychological skill development. *International Journal of Sport & Exercise Psychology*, 3, 59-77.

Gould, D., Dieffenbach, K., & Moffett, A. (2002). Psychological talent and its development in Olympic champions. *Journal of Applied Sport Psychology*, 14, 172-204.

Gullone, E., & King, N. J. (1997). Three-year follow-up of normal fear in children and adolescents aged 7 to 18 years. *British Journal of Developmental Psychology*, 15, 97-111.

Hanton, S., & Jones, G. (1999). The acquisition and development of cognitive skills and strategies: I. Making the butterflies fly in formation. *Sport Psychologist*, 13, 1-21.

Hardy, L., Jones, G., & Gould, D. (1996). *Understanding Psychological Preparation for Sport: Theory and Practice of Elite Performers*. Wiley, Chichester.

Heil, J. (1993). *Psychology of sport injury*. Champaign, IL: Human Kinetics.

Heil, J. (2000). The injured athlete. In Y. Hanin (Ed.), *Emotions in sport* (pp. 245-265). Champaign, IL: Human Kinetics.

Kane, T. K., Baltes, T. R., & Moss, M. C. (2001). Causes and consequences of free-set goals: An investigation of athletic self-regulation. *Journal of Sport & Exercise Psychology*, 23, 55-75.

Kelleman, M., Bussmann, G., Anders, D., & Schulte, S. (2006). Psychological aspects of rowing. In J. Dosil (Ed.), *The sport psychologist's handbook: A guide for sport-specific performance enhancement* (pp. 479-501). Chichester: Wiley & Sons.

Kerr, G., & Minden, H. (1988). Psychological factors related to the occurrence of athletic injuries. *Journal of Sport and Exercise Psychology*, 10, 167-173.

Klint, K. A., & Weiss, M. R. (1986). Dropping in and dropping out: Participation motives of current and former youth gymnasts. *Canadian Journal of Applied Sport Sciences*, 11, 106-114.

Kuhl, J., & Fuhrmann, A. (1998). Decomposing self-regulation and self-control: The volitional components inventory. In J. Heckhausen, & C. S. Dweck (Eds.), *Motivation and self-regulation across the life span* (pp. 15-49). Cambridge, UK: Cambridge University Press.

Lidor, R., Blumenstein, B., & Tenenbaum, G. (2007). Periodization and planning of psychological preparation in individual and teams sports. In B.

Blumenstein, R. Lidor, & G. Tenenbaum (Eds.), *Psychology of sport training* (pp. 137-161). London, UK: Meyer & Meyer Sport.

Mahoney, M. J., & Avenier, M. (1977). Psychology of the elite athlete: An exploration study. *Cognitive Therapy and Research, 1*, 135-141.

Mathesius, R. (1993). Volitive regulation und ansätze ihres trainings. In J. R. Nitsch, & R. Seiler (Eds.), *Psychological training. Proceeding of the 8<sup>th</sup> European Congress of Sport Psychology, 1991*: Kolen Germany. Sant Augustin, Academia, 1993, pp. 166-172.

Magyar, T. M., & Chase, M. A. (1996). Psychological strategies used by competitive gymnasts to overcome the fear of injury. *Technique, 16*, 1-5.

Moran, A. P. (2004). *Sport and exercise psychology: A critical introduction*. London, UK: Routledge.

Papadopoulos, N. (2005). *Dictionary of psychology*. Athens: Modern Publishing.

Puni, A. C. (1971). *Volitional preparation in sport*. Leningrad: GDOIFK.

Puni, A. C. (1977). *Psychological foundations of volitional preparation in sport*. Leningrad: GDOIFK.

Raatma, L. (2000). *Courage*. Mankato, MN: Capstone Press.

Ryba, T. V., Stambulova, N. B., & Wrisberg, C. A. (2009). Forward to the past: Puni's model of volitional preparation in sport. *International Journal of Sport and Exercise Psychology, 7*, 275-291.

Salmela, J. H. (1989). Long-term intervention with the Canadian Men's Olympic Gymnastics Team. *Sport Psychologist, 3*, 340 - 349.

Schmid, A., Peper, E., & Wilson, V. E. (2001). Strategies for training concentration. In J. M. Williams (Ed.), *Applied sport psychology: Personal growth to peak performance* (4<sup>th</sup> ed., pp. 333-346). California: Mayfield.

Schunk, D. H., & Zimmerman, B. J. (2003). Self-regulation and learning. In I. B. Weiner (Ed.), *Handbook of psychology* (pp. 59-78). Hoboken, NJ: Wiley & Sons.

Sheard, M., & Golby, J. (2006). Effect of a psychological skills training program on swimming performance and positive psychological development. *International Journal of Sport & Exercise Psychology, 4*, 149-169.

Singer, R. N. (2002). Pre-performance state, routines, and automaticity: What does it take to realize expertise in self-paced events? *Journal of Sport & Exercise Psychology, 24*, 359-375.

Singer, R. N., & Anshel, M. H. (2006a). An overview of interventions in sport. In J. Dosil, *The sport psychologist's handbook: A guide for sport-specific performance enhancement* (pp. 63-88). New York: Wiley.

Singer, R. N., & Anshel, M. H. (2006b). Assessment, evaluation, and counseling in sport. In J. Dosil (Ed.), *The sport psychologist's handbook: A guide for sport-specific performance enhancement* (pp. 89-120). New York: John Wiley & Sons.

Solomon, G. B. (2003). A lifespan view of moral development in physical activity. In M. R. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 453-474). Morgantown WV: Fitness Information Technology.

Treasure, D. C. (2001). Enhancing young people's motivation in youth sport: An achievement goal approach. In G. C. Roberts (Ed.), *Motivation in sport and exercise* (2<sup>nd</sup> ed., pp. 79-100). Champaign, IL: Human Kinetics.

Van Raalte, J. L., & Brewer, B. W. (Eds.). (1996). *Exploring sport and exercise psychology*. Washington, DC: American Psychological Association.

Vast, R. L., Young, R. L., & Thomas, P. R. (2010). Emotions in sport: Perceived effects on attention, concentration, and performance. *Australian Psychologist, 45*, 132-140. doi: 10.1080/000-50060903261538

Vealey, R. S. (1988). Future directions in psychological skill training. *Sport Psychologist, 2*, 318-336.

Vealey, R. S. (1994). Current status and prominent issues in sport psychology

interventions. *Medicine and Science in Sports and Exercise*, 26, 495-502.

Weinberg, R., & Comar, W. (1994). The effectiveness of psychological interventions in competitive sports. *Sport Medicine*, 18, 406-418.

Weinberg, R. S., & Gould, D. (2003). *Foundations of sport and exercise psychology* 3<sup>rd</sup> ed.). Champaign, IL: Human Kinetics.

Weinberg, R. S., & Williams, J. M. (2001). Integrating and implementing a psychological skills training program. In J. M. Williams (Ed.), *Applied sport psychology: Personal growth to peak performance* (4<sup>th</sup> ed., pp. 347-377). California: Mayfield.

Weiss, M.R. (1991). Psychological skill development in children and adolescents. *The Sport Psychologist*, 5, 335-354.

Weiss, M. R., & Williams, L. (2003). A little friendly competition: Peer relationships and psychosocial development in youth sport contexts. In M. R. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 165-196). Morgantown WV: Fitness Information Technology.

Weiss, M. R., Wiese, D.M., & Klint, K. A. (1989). Head over heels with success: The relationship between self-efficacy and performance in competitive youth gymnastics. *Journal of Sport and Exercise Psychology*, 11, 444 – 451.

White, A., & Hardy, L. (1998). An in-depth analysis of the uses of imagery by high-level slalom canoeists and artistic gymnasts. *Sport Psychologist*, 12, 387-403.

Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 13-39). San Diego: Academic Press.

Zinsser, N., Bunker, L., & Williams, J. M. (2001). Cognitive techniques for building confidence and enhancing performance. In J. M. Williams (Ed.), *Applied sport psychology: Personal growth to peak performance* (4<sup>th</sup> ed., pp. 284-311). Mountain View, CA: Mayfield.

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