

The Effects of a Psychological Intervention Program in Swimming

Maria Pavlidou , George Doganis, Greece

Maria Pavlidou is a PhD Student in Sport Psychology at Aristotle University

George Doganis is Maria's supervisor and a Sport Psychology Professor at Aristotle University in Thessaloniki, Greece.

Email: ladyback4ever@hotmail.com

Abstract

The purpose of the investigation was to examine the effects of a Psychological Intervention Program (PIP) in swimming performance. The program included several psychological skills such as, relaxation, imagery, goal setting, concentration, and self-talk. The program was evaluated through the Competitive State Anxiety Inventory-2 (CSAI-2) and the swimming performance of each participant. Participants were 14 young swimmers (10 male and 4 female) in the experimental group and 29 participants (15 male and 14 female) in the control group who completed the CSAI-2 before the simulated race. The experimental group followed a psychological intervention program for nine weeks and then both teams were retested after completing the CSAI-2 again. The results showed that there was a significant increase in performance and confidence in the experimental group after the nine-week intervention but no significant change in the cognitive and somatic anxiety when compared to the control group

Introduction

“Choking” has been described, by many athletes like Pete Sampras and Greg Norman, as one of the most embarrassing and humiliating experience they have ever felt (Sampras, 2000, p.68). However, there is still confusion among athletes, coaches, and media as to what exactly choking is. Most researchers have trouble defining choking but they all agree it hurts performance (Weinberg & Gould, 2000). Choking can be defined as the inability of the athlete to perform up to certain

standards, something, which is due to fear of not performing according to one's abilities (Masters, 1992). Choking produces an impaired performance due to extensive pressure and stress (Wang, 2002).

Some athletes tend to overanalyze during a match so they become anxious, which takes their focus off their main goal. Such behavior generates choking because the concentration level decreases, the athlete focuses only on negative points, and the athlete appears confused (Nideffer, 1992).

Choking is directly related to impaired performance, but impaired performance is not necessarily related to choking according to Weinberg and Gould (2000).

Possible causes of choking are included in the arousal-performance theories (Easterbrook, 1959), the inverted U hypothesis (Yerkes & Dodson, 1908), the catastrophe model (Hardy, Jones, & Gould, 1996), the distraction model (Nideffer, 1992), and the automatic execution model (Baumeister, 1984).

The arousal-performance theories suggest that when high levels of arousal appear, the range of things that the athlete can attend to decreases. In addition, the increase in arousal causes further reduction in attention resulting in important cues to be ignored and performance to decline. Some of the consequences of too much arousal include, muscle tension, coordination difficulties, and changes in attention and concentration (Easterbrook, 1959).

The inverted-U hypothesis supports that low levels of arousal also lead to impaired performance. As arousal increases so does performance, up to a certain level, after which an increase in arousal causes a decrease in performance (Yerkes & Dodson, 1908). So, the relationship between arousal and performance is not linear and the best performances occur when the athlete is ideally aroused, where impaired performances correlate with low or high arousal (Wann, 1997).

Choking appears when there is an increase in anxiety and pressure and as a result the athlete is unable to face the game's demands. The subject of choking needs further research in order to better understand and prepare athletes to deal with it effectively.

The implementation of a psychological program in the athlete's daily routine may result in the successful handling of pressure and anxiety. Before starting a psychological program the sport psychologist should meet with the athlete to understand the athlete's needs, to explain what sports psychology is and what it may be able to contribute to the athlete and his or her performance. Our basic mental training program includes four psychological techniques, which are relaxation, imagery, goal setting and thought control. All these techniques have as a goal to reduce anxiety and worry, to increase self-esteem, confidence and concentration, and prepare the athlete to deal with stressful situations (Theodorakis, Goudas, & Papaioannou, 2002).

In our opinion, the best time for an athlete to start mental practice is during off-season because that provides enough time to learn and practice the new skills. Our program varies in time but it can last from 3 to 6 months or even up to a year. The daily mental practice lasts from 10 to 15 minutes before or after practice, 3 to 5 days a week. In addition, the athlete and the sport psychologist ideally meet on a weekly basis in order to discuss upcoming issues or problems. Mental training, like physical, needs extensive practice before it starts blossoming (Theodorakis et al., 2002).

The purpose of the study was to examine the effects of a Psychological Intervention Program (PIP) in swimming performance and to assess whether the swimmers who participated reported improved performance, an increase in their confidence, and reduced the levels of anxiety.

Participants

The total number of participants in the Psychological Intervention Program (PIP) was 14 young swimmers (10 male and 4

female) aged between 11 and 16 years (mean age = 14.17, SD = 1.51) from the northern part of Greece who were members of the same swimming club. Their swimming experience ranged from 2 to 7 years (mean = 4.85, SD = 1.40) and their weekly practice ranged from 12 to 20 hours (mean = 14.71, SD = 2.09). The control group had 29 participants (15 male and 14 female) aged between 12 and 16.50 years (mean age = 13.79, SD = 1.40) from the northern part of Greece who were members of another swimming club. Their swimming experience ranged from 2 to 12 years (mean = 5.96, SD = 2.51) and their weekly practice ranged from 12 to 20 hours (mean = 14.71, SD = 2.09).

Instruments

Competitive State Anxiety Inventory. The Competitive State Anxiety Inventory-2 (Martens, Vealey, & Burton, 1990) was administered twice, once before each swimming performance measurement. The CSAI-2 is a 27-item self-report is designed to measure cognitive and somatic anxiety, as well as confidence. For this study the Greek version of the inventory was used (Stavrou, Kakkos, & Psychountaki, 1998), which contains 15 items to assess the above-mentioned three dimensions of state anxiety. Previous studies seem to support its validity and reliability (Jones & Swain, 1992; Kakkos & Zervas, 1996).

Performance Measures

The athletes' swimming performance was measured twice. Once before the beginning of the PIP and once after the end of the PIP which was nine weeks later. Each athlete raced 50 meters of a preferred stroke style and the time was reported in seconds.

Procedure and Intervention Program

The study began during the off-season, which was the first week of October and lasted for nine weeks. The nine-week period was chosen after extensive discussion with sport psychologists and it was decided that this amount of time gives adequate time for the athlete to become comfortable in using the techniques (Theodorakis et al., 2002). The first author conducted a meeting with the coaches in order to inform them about the research. Then, she met with all athletes, from both groups, where she explained the procedure in detail and she handed the athletes envelopes, which included an informed consent form and a demographics sheet. The athletes were asked to fill out the forms and return them the day of their first measurement.

The day of the first measurement the athletes, from both the experimental and the control group, returned their forms and after that the author explained the procedure once more, five minutes before the first timed 50 meter race the athletes were given the CSAI-2 to fill out. Then, one by one they swam a 50 meter race and their times were recorded. The first timed measurement was considered a race of lesser pressure, since the athlete raced alone only in the presence of the examiner.

After the pretest was completed the first author met with the athletes in the experimental group again. This time they were introduced to the psychological training program. The intervention program included an individual goals sheet, a concentration exercise, a daily log, and an audio CD disc containing relaxation and imagery scripts. Every three weeks the content of the program was individually modified. More specifically, the athletes were asked to set new goals and the

concentration exercise, relaxation techniques, and the imagery scripts were changed. The athletes also kept a performance diary, which was collected once a week by the first author of the study. She also met with the athletes once a week, in order to discuss any issues that had come up and also to keep track of the intervention.

The goals sheets were given to the athletes so that they would write down their individual goals, the strategy that they planned to use in order to reach these goals, and the date by which they would accomplish them. The swimmers were advised to focus on performance and technical goals and not on outcome goals.

Concentration was practiced by constantly looking at their goggles for five minutes daily and trying to think nothing at all. They were also asked to listen to their relaxation and imagery scripts twice a day, once in the morning and once just before practice.

The control group continued their daily practice without any intervention and without any contact with the author.

At the end of the nine-week intervention period the athletes in both groups participated in a second set of measurements. The day of their second timed 50 meter race the author explained that each athlete's race would be timed, video recorded and watched by a number of spectators and teammates. The second race was videotaped and included spectators in order to increase the pressure on the athletes and heighten the possibility of choking. According to Butler & Baumeister (1998) and Heaton & Sigall (1991) pressure is increased by the presence of an audience and video camera. Five minutes before the start the athletes completed, once again, the CSAI-2.

Results

A two-way analysis of variance (group X measurement) with repeated measurements on the second factor was used to examine the effect of the intervention program on the performance, anxiety and confidence levels of the swimming athletes. Results regarding the performance revealed a significant interaction effect between the two factors (Wilks' $\lambda = .843$, $F_{(1, 41)} = 7.65$, $p < .008$, $\eta^2 = .16$). Simple main effect analysis was employed to interpret the interaction effect. Results showed that performance levels of the experimental group improved ($p = .003$) and the control's group performance levels remained constant ($p = .82$).

A two-way analysis of variance for confidence revealed significant main effects on the groups, ($F_{(1, 41)} = 6.53$, $p = .014$, $\eta^2 = .14$), and measurements factors (Wilks' $\lambda = .089$, $F_{(1, 41)} = 421.44$, $p < .001$, $\eta^2 = .91$). Both groups increased their confidence levels, but the experimental group increased their confidence more than the control group.

Finally, only the measurement main effect for the somatic anxiety and cognitive anxiety reached statistical significance, (Wilks' $\lambda = .175$, $F_{(1, 41)} = 192.69$, $p < .001$, $\eta^2 = .82$) and (Wilks' $\lambda = .116$, $F_{(1, 41)} = 311.10$, $p < .001$, $\eta^2 = .88$). Mean values shows that both groups showed an increase in both somatic and cognitive anxiety. The experimental group showed a greater increase in somatic anxiety compared to the control group.

Discussion

The aim of the study was to examine the effects of a Psychological Intervention Program (PIP) in swimming performance. Choking is considered the decline in performance under pressure (Baumeister, 1984). Pressure was created by recording

each athlete's race by a camera and by the presence of audience. The results showed that the participants in the experimental group experienced an increase in their performance under the higher-pressure condition after the completion of the psychological training program. The fact that the experimental group's performance showed an increase provides support for the success of the mental training program supports the findings of several other studies (Edwards & Hardy, 1996; Thomas, Mayland, & Hanton, 2004; Theodorakis et al., 2002). It also supports the notion that relevant psychological training equips athletes to better handle and perform within stressful situations (Wang, 2002).

In addition, a significant improvement in confidence in the experimental group over the course of the intervention shows that athletes increased their beliefs. Confidence helps the athletes remain focused on their task no matter what the outcome might be

and it minimizes the chances of choking. The levels of cognitive anxiety remained constant across the two measurements between the two groups. However somatic anxiety increased to higher levels for the experimental group compared to the control group. This finding combined with the fact their performance improved, possibly, shows that athletes in the experimental group were able to handle the increased anxiety successfully in the second measurement, after they had been exposed to certain relaxation techniques (Theodorakis et al., 2002).

Future studies should aim at replicating this type of applied intervention or incorporate other well established intervention programs, using a larger number of participants from different sports and include assessments of how the athletes in the experimental and control group react in real race or real performance situations.

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