Psychological Skills Training Program: Stress Management for College Female Ice Hockey Goalie

8 December 2011

ESS 220: Psychology of Sport

Excellent early Master’s level work ☺ A+
**Introduction**

The use of psychological skills to enhance mental skills during athletic performances is increasing due to the realization that physical conditioning is not sufficient alone. Psychological skills enable an athlete to take on the proper mindset to compete and achieve success; consequently, many athletes use a psychological skills training program (PST program) to enable them to have the best season possible. To increase the effectiveness of a PST program, the skills should not only be sport-specific but also be athlete-specific (Bacon, 1989).

Ice hockey is a fast-pace sport that not only requires fast thinking during play, but also fast recovery after events such as goals being scored, penalties, and lost face-offs. Like goaltenders in other sports, goalies are the “last line of defense.” There are numerous factors than make the play more difficult and increase the stress of ice hockey goaltenders specifically. Ice hockey play happens much faster on ice, a surface with very little friction. Also, the play can be taken behind the net, which is not possible in most other sports including field hockey, soccer, and lacrosse; this is an added level of difficulty for the goaltender that has to have 360 degrees awareness. A third factor is the size of a rink is smaller than other sport fields and it contains walls which results in a small area that the puck is kept in play, particularly in front of the goaltender. As a result, these potential stressors increase the need for PST programs for ice hockey goalies.

A study by Rogerson and Hyrcaiko (year?) examines the use of centering and self-talk on four male goalies ages 16-18 in the junior A division (2002). Athletes were educated about the study and about the skills they would be using. They were then assessed before and after the psychological skills intervention for their save percentage. For centering, the athletes took a single deep breath and used self-talk. Their self-talk targeted positioning and focus, self-affirmations, and mood. They athletes were able to choose which skills they would use and
when they would use them. The effectiveness of these psychological skills was measured by examining the save percentage of each goalie before and after the institution of the psychological skills. The save percentage increased by 1.5-3.3% after the psychological skills intervention. Unfortunately, not many studies have been conducted examining the use of a PST program for ice hockey goalies, particularly those that are not at the professional level.

In this study, a program was designed based off of sport- and athlete-specific mental skills described by Bacon (1989). The objective of this study was to help a female college-level goaltender manage her stress during ice hockey practice and games through visual motor behavior rehearsal (VMBR), centering, thought-stopping, and positive self-talk.

**Methods and General Procedures**

**Subjects and Design**

The subject was a 21-year-old female goaltender participating in women’s club ice hockey at the collegiate level of intermediate skill. She had no previous use of a psychological skills training program.

**Assessment of mental skills and setting of psychological goals**

The participant was first assessed on her mental skills using the questionnaires featured in Table 1 (Appendix). The participant was also interviewed to determine her areas of desired improvement. Based on these, stress during performance was found to be a problem, and thus a psychological skills training program was created to address this issue (Appendix). The athlete stated that “perfectionist tendencies [were the] root of [it] all,” yay!! 😊 referring to how stress negatively impacted her performances. The athlete appeared to have biggest problems with competitive state anxiety, somatic state anxiety, self-confidence, coping with adversity, peaking under pressure, freedom from worry, concentration, and achieving flow.
Table 1: Compilation of the athlete’s scores on questionnaires and assessments

<table>
<thead>
<tr>
<th>Questionnaires and Assessments</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEOSQ</td>
<td>Task = 27, Win = 16</td>
</tr>
<tr>
<td>PMSCQ-2</td>
<td>Task = 66, Win = 43</td>
</tr>
</tbody>
</table>
| FSS-2                          | Total: 118  
Challenge-skill balance: 13  
Merging of action and awareness: 14  
Clear goals: 15  
Unambiguous feedback: 16  
Concentration on the task at hand: 12  
Sense of control: 12  
Loss of self-consciousness: 13  
Transformation of time: 10  
Autotelic experience: 13 |
| ASCI                           | Total: 53  
Coping with adversity: 5  
Coachability: 10  
Concentration: 6  
Confidence and achievement motivation: 10  
Goals setting and mental preparation: 11  
Peaking under pressure: 3  
Freedom from worry: 8 |
| GEQ                            | Group, task: 26  
Group, social: 31  
Integration, task: 27  
Integration, social: 26 |
| TSCI                           | 62 |
| Self-efficacy scale            | Physical Strength total: 380  
Driving total: 680 |
| TAIS                           | BET: 8  
OET: 2  
BIT: 8  
OIT: 2  
NAR: 5  
RED: 2 |
| Concentration Grid             | Trial 1 (normal): 15  
Trial 2 (pressure conditions): 8 |
| SCAT                           | 22 |
| CSAI-2                         | Competitive state anxiety: 21  
Somatic state anxiety: 25  
Self-confidence: 21 |
| CTAI                           | Competitive trait anxiety: 16  
Somatic trait anxiety: 14  
Self-confidence: 23 |
| Imagery                        | Visual: 18  
Auditory: 19  
Kinesthetic: 18  
Mood: 18 |
Psychological goals were set to address these areas. The athlete’s main objective was to decrease her stress during the game by decreasing factors such as anxiety and worry and increasing concentration, self-confidence, and ability to get into flow. A PST program using VMBR, centering, thought-stopping, and positive self-talk through cue words was created with influence from Suinn’s work on interventions for stress management in sports (2005).

PST schedule

Once psychological goals were set, the athlete was educated about psychological skills training and sports-specific techniques that could be used to help her stress management during ice hockey. Psychological skills were chosen to specifically help stress-specific to goaltenders.

The athlete has on-ice practice Tuesdays and Thursdays and has games on Saturdays and Sundays. Practices and home games are located in the same home rink; however, away games are located in a variety of rinks, some that the athlete has not yet played in. Prior to the start of each practice or game, the athlete should use visual motor behavior rehearsal in the locker room while sitting on the bench after getting equipment on to relax, as the goaltender has moderate state anxiety.

Because ice hockey is a sport that moves quickly, the goaltender should have skills that take very little time to get the goaltender back on track after stress-inducing situations. Rogerson and Hyrcaiko saw positive effects of centering to achieve relaxation and self-talk while on ice (2002). Accordingly, centering and self-talk were continued in this study. Centering should first be used when a player comes out of a bad drill before the next drill starts or after a goal is scored before the next face-off. To achieve concentration by detracting from negative, stressful thoughts, the athlete should practice thought-stopping after negative outcomes like a goal scored. Following this, the goaltender should use positive self-talk and cue words before new drills or plays during the game to correct their mistake in a positive manner for future situations.
Examples include “corner slide corner” when somebody skates the puck behind the net and “angle puck commit” when an opponent is coming in off a breakaway. These are skills that would be sporadically used as opposed to the regimented use of VMBR before practices and games (Table 2).

<table>
<thead>
<tr>
<th>Time during practice/game</th>
<th>Skill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before every practice/game starts in locker room</td>
<td>1) VMBR</td>
</tr>
<tr>
<td>After stressful situations during games and practices</td>
<td>1) Centering</td>
</tr>
<tr>
<td></td>
<td>2) Thought-stopping</td>
</tr>
<tr>
<td></td>
<td>3) Self-talk: cue words</td>
</tr>
</tbody>
</table>

The effect of these skills was assessed by questionnaires. Relaxation was measured before and after VMBR as a rating on a scale of -10 to 10 for five uses of training. Similarly, the Competitive State Anxiety Inventory-2 (CSAI-2) and SCAT were also completed prior to use of psychological skills and post-psychological skills to measure the level of anxiety.

Due to knee injuries, the goaltender was unable to practice or compete in games, so assessment of problem areas like peaking under pressure, coping with adversity, concentration, and freedom from worry were to unable to be assessed using the Athletic Coping Skills Inventory (ASCI). The athlete’s use of centering, thought-stopping, and self-talk following stress-inducing situations was also unable to be evaluated and thus a pre/post design was not possible to evaluate the performance with the use of this program. Future examination of this psychological skills training program should study ASCI results before and after PST use and look at the goaltender’s save percentage before and after the institution of centering, thought-stopping, and self-talk to determine whether they are effective skills for dealing with stress.
Results

While the athlete’s performance was unable to be assessed, questionnaires were used to measure the athlete’s level of relaxation before and after VMBR. With all uses, relaxation increased (Table 3); however, the difference between before and after VMBR decreased over time (Figure 1).

**Table 3**: Evaluation of the use of VMBR and relaxation before and after practice use given by a relaxation rating on a scale of -10 to 10

<table>
<thead>
<tr>
<th>Day</th>
<th>Score before</th>
<th>Score after</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-2</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>-2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>-4</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>-5</td>
<td>-1</td>
</tr>
<tr>
<td>5</td>
<td>-3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Figure 1**: Relaxation rating on a scale of -10 to 10 before and after VMBR corresponding to each respective day

The CSAI-2 was also used before and after every VMBR session (Table 4). Competitive state anxiety and somatic state anxiety appeared to decrease with use of VMBR (Figures 2 and 3).
respectively). However, there was very little difference (small increase) in self-confidence with use of VMBR (Figure 4).

**Table 4**: Evaluation of the use of VMBR and anxiety before and after practice use by CSAI-2

<table>
<thead>
<tr>
<th>Day</th>
<th>Score before</th>
<th>Score after</th>
</tr>
</thead>
</table>
| 1   | Competitive state anxiety (CSA): 21  
     | Somatic state anxiety (SSA): 25  
     | Self-confidence (SC): 21  
     | Competitive state anxiety (CSA): 14  
     | Somatic state anxiety (SSA): 13  
     | Self-confidence (SC): 24  |
| 2   | CSA: 21  
     | SSA: 24  
     | SC: 20  
     | CSA: 15  
     | SSA: 13  
     | SC: 22  |
| 3   | CSA: 21  
     | SSA: 23  
     | SC: 20  
     | CSA: 15  
     | SSA: 12  
     | SC: 21  |
| 4   | CSA: 22  
     | SSA: 24  
     | SC: 20  
     | CSA: 13  
     | SSA: 10  
     | SC: 23  |
| 5   | CSA: 21  
     | SSA: 23  
     | SC: 20  
     | CSA: 12  
     | SSA: 10  
     | SC: 22  |

**Figure 2**: CSA score before and after VMBR corresponding to each respective day
SCAT results showed a decrease in sport competition anxiety each day, showing a similar peak in anxiety on day four as the minimum of relaxation (Figure 5).
Had the athlete been able to participate in practice and games, it is possible that she would have been better able to manage stress using centering, thought-stopping, and positive self-talk through cue words as suggested by Rogerson and Hyrcaiko’s study (2002).

**Discussion**

Examining the trend of the athlete’s level of relaxation in Figure 1, the decreases on day 4 and the difference between relaxation before and after VMBR is less than on day 1 (Figure 1). This trend was mimicked by the SCAT scores as well (Figure 5). The athlete attributed this to an academic cause. She also revealed that the VMBR was more difficult to institute herself, and that it was more effective when conducted by a certified sports psychologist as done on day 1.

This PST program created for a female, collegiate-level goaltender appeared effective at reducing her anxiety when measured by the CSAI-2 and SCAT questionnaires and also increasing relaxation using VMBR. However, this training program did not appear as effective at increasing the self-confidence level of the athlete. As the athlete says much of her stress is due to her perfectionist tendencies, her self-confidence could be explained by Ellis’ 12 Irrational Beliefs (Edelstein, 2009). The athlete resonates well with “the idea that we should be thoroughly
competent, intelligent, and achieving in all possible respects.” By not being able to achieve highly in all areas, that could lower the athlete’s self-confidence despite the VMBR. Thus, this program may not be completely effective at abolishing stress in ice hockey.

To continue stress management, future studies should examine the athlete’s stress level after use of positive self-talk that counteracts the irrational beliefs such as through Rational Emotive Behavior Therapy. Additionally, once the athlete is no longer injured, centering, thought-stopping, and positive self-talk should be tested as well as how often the athlete peaks under pressure, copes with adversity, concentrates well, and is free from worry. Similarly, a PST modeled after Rogerson and Hyrcaiko’s pre/post save percentage might be a better method to measure the overall effectiveness of the PST program (2002). Furthermore, other types of psychological skills could be tested such as energization through butterflying rapidly, a goalie-specific action that would increase the goaltender’s heart rate while also perfecting an important skill.

During the exit interview, the athlete stated satisfaction with changes in level of relaxation; however, she could not say too much about how it affected her stress level, as she was unable to participate in her sport. Ultimately, VMBR appears to be an effective relaxation and anxiety-reducing training. More research needs to be tested on how it affects stress for ice hockey goalies during competition.
References


http://www.stressgroup.com/12IrrationalBeliefs.html
Appendix

My Best-Ever Moment in Ice Hockey

ESS 220: Psychology of Sport

12 September 2011
Having always been a spectator, I picked up ice hockey my junior year in high school (NMH). I started on the JV team and had the least experience out of everybody during my first year. However, six days of hockey a week made me a better skater, gave me stronger legs, and enhanced my skills. By my senior year, I was the first string goalie, but I was not the best in the league. The first time we played our rivals that season, we lost 8-1. We played this team again towards the end of the season. Because the first game was such a blowout, there was an enormous amount of pressure to make a comeback; it was also my last game in high school and with my team. As before every game, I was nervous to the point where I could not eat a real meal. I went to the locker room early like always to sit in my cubby and focus. I always like to be the first ready and on the ice to warm up and get comfortable. After ten minutes of warm-up with the usual drills, our team huddled and did our chant. Everyone skated into position; I skated in front of the crease and bent down into position. As the ref dropped the puck, my hands and knees were shaking a bit, and I hoped my teammates gained possession so the puck would not start in our defensive zone. I had some lucky saves that game, some last second with my skate while others were pokes with my stick. The best feeling always came with breakaway saves. My opponents would come in fast, and I would have no defense. My heart rate definitely picked up, and I was not only sweating because I was skating hard in a fast game. I would be outside of the crease, trying to cut angles; this was scary because the skaters without bulky goalie pads could have easily skated around me once I committed to a certain type of save. When I did make the butterfly save or the glove save, it felt good to hear an uproar of cheers. I stopped the advance and prevented them from scoring. The positive energy from one save channeled into another, and my confidence increased. After two periods, my team managed to score two goals, and I let none in. I felt elation. I had done well, and I know my teammates appreciated that.
Task and ego orientation in sport questionnaire

TEOSQ
(Modified by Bacon, 2011)

Name: [Handwritten] Date: 09/13/11

Directions: Please read each of the statements listed below and indicate how much you personally agree with each statement by circling the appropriate response. When do you feel most successful in sport or your physical activity? In other words, when do you feel a sport or physical activity has gone really well for you?

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I'm the only one who can do the play or skill.</td>
<td>[Handwritten]</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>I learn a new skill and it makes me want to practice more.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>I can do better than my friends.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>The others can't do as well as me.</td>
<td>1</td>
<td>[Handwritten]</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>I learn something that is fun to do.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Others mess up and I don't.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>I learn a new skill by trying hard.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>I work really hard.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>I score the most points/goals/hits, etc.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>Something I learn makes me want to go and practice more.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>I'm the best.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>A skill I learn really feels right.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Scale 1 (WIN): 16
Total Scale 2 (TASK): 27