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Psychological skills development in professional and amateur golfers

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Abstract

This study aimed to compare psychological skills used by professional and amateur golfers during competition and training, and to differentiate psychological skill development based on experiences in psychological skills training. A total of 150 golfers (18–49 years) were recruited and divided into professional and amateur groups. Their psychological skills were collected by using the Test of Performance Strategies Questionnaire and analyzed by Mann-Whitney U test and Wilcoxon matched pairs signed-ranks test. Results showed that when compared to professional golfers, amateur golfers showed significantly higher score of imagery and relaxation during both training and competition, as well as higher scores of goal setting during training and higher score of negative thinking during competition ($p < .05$). With competition, professional golfers had significantly greater scores of goal setting and activation ($p < .05$) but lower scores of automaticity, imagery, attentional control, and negative thinking than in training ($p < .05$). Similarly, amateur golfers performed activation technique significantly higher during the competition but less goal setting as compared with those during training ($p < .05$). From an in-depth interview, both experienced and inexperienced golfers showed similar approaches for psychological skills development. It seemed that experienced golfers could achieve a better score when practicing psychological skills training including breathing control, imagery, relaxation, positive thinking and talking, pre-shot routine and focus on the ball at impact. These techniques are suggested for inexperienced golfers or beginners to improve their performance.

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Introduction

Golf is a mental game which requires golfers to have decision making and coping skills throughout a tournament. In general, professional golfers participating on the golf course probably take about four hours for a round of 18 holes and 72 strokes per round, but most other golfers take longer than that per round. (Kemarat & Kemarat, 2016). The average time for the PGA Tour golfers performing the backswing and downswing is approximately 0.75 sec and 0.25 sec, respectively (Rice, 2013). These situations require appropriate psychological skills for efficient results. However, many golfers are unaware of the importance of psychological skills. Since there are many psychology factors affecting golfer performance, psychological skills training (PST) is crucial for enhancing sport performance (Cox, 2012). Hagan, Dietmar, and Thomas (2017) stated that effective preparation for sport performance is crucial in helping the individual to cope with the pressure and stress in any situation. Elite successful athletes are different from less successful ones because they have better psychological skills including concentrations, higher confidence, more task-oriented thoughts, lower anxiety, more positive thoughts and images, and more determination or commitment. According to the concept of psychological skills use, which focuses on the difference of duration, skill level, and experience in PST (Bois, Sarrazin, Southon, & Boich, 2009; Katsikas, Agreotaki, &

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Amirniotou, 2009), evidence of this concerning Thai golfer performance is still lacking. Thus, the purposes of the present study were to compare the psychological skills used by Thai professional golfers and amateur golfers and to differentiate their skills used during training and competition. Furthermore, development of psychological skills in golfers experienced in PST compared with those without experience was explored.

Literature Reviews

Walker (2015) stated that the mental game plays a crucial role in the game of golf. Nicklaus (1976) reported expert golfers have always discussed the importance of thinking correctly on the golf course with the most successful golfer declaring "a good golf shot composed of 10 percent swing, 40 percent setup and 50 percent mental strength". Currently, although the knowledge of sport psychology has spread to coaches, athletes or team staff, psychological skills practice has not helped achieve the best performance. Cohen, Tenenbaum, and English (2006) found that PST enhanced emotional self-regulation skills and improved golf performance. Moreover, Finn (2018) found that some basic mental skills such as positive thinking and imagery could help increase golfers' psychological proficiencies while either on or off the golf course. However, this study did not report specific techniques used in different situations for playing golf or level of performance. Therefore, this article will focus on the difference in psychological skills used during training and competition and study insight into the development of psychological skills in golfers experienced in PST in Thai professional and amateur golfers. A key point to consider is that these mental golf skills, like physical golf skills, will not be learned overnight. With practice and patience, these skills can become highly effective in both training and competition.

Methodology

Participants

There were 150 golfers who volunteered for this study. Based on their performance levels, they were divided into professional and amateur groups (75 each), age 25.11±7.71 years. Inclusion criteria require that professional golfers have been certified by Thailand Professional Golf Association while golfers who play golf for competitive or recreation reasons were defined as amateur golfers. They were also classified by their psychological skills experiences, which included 90 experienced and 60 inexperienced golfers. Regarding the Test of Performance Strategies Questionnaire (TOPS) scores of all participants, 10 golfers were taken into an in-depth interview procedure. All participants provided written informed consent prior to completing questionnaires. Ethical approval was obtained prior to data collection from Ethics Review Sub-Committee for Research Involving Human Research Subjects of Thammasat University, No. 3.

Data Collection

This research was performed by using explanatory mixed method design including quantitative and qualitative measurements. These were evaluated based on the Test of Performance Strategies Questionnaire (TOPS) to collect the psychological skills performance. Then, the TOPS scores were analyzed and considered for the representative golfers for an in-depth interview.

The TOPS was used to evaluate the psychological skills in golfers. TOPS was developed by Thomas, Murphy, and Hardy (1999) and translated into a Thai version by Pokard in 2014. (Pokard, 2014). All golfers completed the TOPS questionnaire in Thai version consisting of 31 items for training session and 30 items for competition session covering strategies performed during training and competition session. Strategies used during training included items which consisted of goal setting, automaticity, emotional control, imagery, activation, self-talk, relaxation, and attentional control. Strategies used in competition were the same but involving negative thinking instead of attentional control, including goal setting, automaticity, emotional control, imagery, activation, self-talk, relaxation, and negative thinking. On each item, the participants rated their use of the specific skill ranging from 1 (never) to 5 (always). The total score of 155 points was averaged from all 31 items based on these scores, and participants were divided into high usage of psychological skills (scores > 128 points) and low usage of psychological skills (scores < 95 points) modified from Frey, Laguna, & Ravizza (2003). Moreover, the average of the items in each factor was calculated. The internal consistency of the subscales on the TOPS ranged from .71 to .85. (M = .94; Pokard, 2014).

For an in-depth interview procedure, 10 golfers were randomly selected from 150 golfers who were classified by their TOPS as high and low usage of psychological skills. A semi-structured interview was considered to be an effective and sensitive method of construction of an in-depth insight into complex phenomenon of psychological skills development. The line-by-line coding was used to identify appropriate themes and verify independently that the themes were a true reflection of the data. All participants confirmed that such themes represented their experience accurately. Moreover, trustworthiness was enhanced by collecting and comparing data from three different participant sources as approaching the interview, data organization, summarization of the interviews, and explaining the meaning as it relates to psychological skills**.**

Data Analysis

Data were analyzed using mean, standard deviation, frequency and percentage, and internal consistency of the TOPS was tested by using Cronbach's alpha coefficient. The normal distribution of the data was tested using the Kolmogorov-Smirnov test. As data was not normally distributed, nonparametric statistics were used to test differences between two main factors. For the comparisons of psychological skills between training and competition session, the Wilcoxon matched pairs signed-ranks test was assessed. Furthermore, the Mann-Whitney U test was used to compare between professional and amateur golfers. Statistical significance was set at the .05 level.

Results

There were 70.70 percent of professional golfers and 54.70 percent of amateur golfers who received golf skills

provided by golf instructor. The remaining 21.30 percent of professional and 33.30 percent of amateur golfers trained themselves. Among the professional golfers, 29.30 percent were trained in psychological skills governed by sports psychologists. For the amateur golfers, 12.00 percent were trained by sports psychologists. The remaining golfers were trained by their parents, friends, and other people. For psychological skill training methods, around 32 percent of the professional golfers performed based on the guidelines of sports psychologists, while around 18.67 percent of the amateur golfers followed the guidelines of sports psychologists.

Characteristics of Psychological Skills in the Golfers

When compared to the professional golfers, the amateur golfers showed significantly higher scores of imagery and relaxation during both training and competition, higher score of goal setting during training and higher score of negative thinking during competition ($p < .05$). (see Table 1). With the competition, the professional golfers had significantly greater scores of goal setting and activation ($p < .05$) but lower scores of automaticity, imagery, attentional control, and negative thinking than in training ($p < .05$). Similarly, the amateur golfers performed activation technique significantly higher during the competition but less goal setting compared with that during training ($p < .05$). (see Table 1 and 2). When considering the experiences in PST, results showed significant differences in psychological skills used during competition between the experienced and inexperience golfers ($p < .05$). Among eight techniques of psychological skills, the experienced golfers performed the self-talk techniques greater than the inexperience ones. However, both groups showed no difference in psychological skills used during the training sessions (see Table 3).

The interview data results showed that the professional and amateur golfers who had experience and non-experience in psychological skills demonstrated different styles and methods used in their psychological skills. Although they had similar psychological skills, details of the guidelines or procedures were different between training and competition sessions. Professional and experienced amateur golfers strictly practiced psychological skills according to the program prescribed by the sports psychologist due to routine monitoring and evaluating by sports psychologists. There was some variation in the name of the mental programs and the individual training details depending on the specific problem condition. Overall, they focused on how to practice breathing, imagining, relaxing, thinking and talking to yourself. There was a definite set of psychological training sessions before bedtime and during actual practice at the driving range and a golf course. The average number of times for athletes to compete was between 1–2 times per month. In this case, sports psychologist would use an alternative method such as phone call or application to communicate with athletes for monitoring the progress and mental state that occurred during competition. Most inexperienced golfers prepared their own mental state by talking to parents, coach, sports psychologist, or reading a golf magazine, and then applied such to training under pressure situations. Moreover, during practice and competition sessions, both professional and amateur golfers who had experience and non-experience in PST tried to use their prior psychological skills. Since the situations varied from training to competition, results found that most golfers thought and perceived situations differently such as self-perception in terms of thoughts, feelings and behavior responding to events. During the tournament, the golfers expected superior or equal performance to other athletes. This caused a lot of pressure in the competition. However, during practice, the golfers followed the regular training program, which had no pressure, was fun and gave self-satisfaction.

Table 1 Comparisons of psychological skills between professional and amateur golfers during training and competition sessions

Psychological skills	Professional (n = 75) M (SD)	Amateur (n = 75) M (SD)	Median Difference	95% CI	Mann-Whitney U	Z	p	r
Training								
1. Goal setting	3.32 (0.60)	3.80 (0.59)	-0.34	[-0.67,-0.33]	1583.50	-4.68	.00*	-0.38
2. Automatically	3.52 (0.64)	3.58 (0.68)	0.00	[-0.25, 0.25]	2667.50	-0.55	.58	-0.04
3. Emotional control	3.15 (0.54)	3.05 (0.78)	0.00	[-0.25, 0.25]	2680.50	-0.50	.62	-0.04
4. Imagery	3.41 (0.80)	3.67 (0.71)	-0.25	[-0.50, 0.00]	2261.50	-2.09	.04*	-0.17
5. Activation	2.83 (0.64)	2.98 (0.76)	-0.25	[-0.50, 0.00]	2359.00	-1.72	.09	-0.14
6. Self-talk	3.60 (0.73)	3.68 (0.75)	0.00	[-0.25, 0.25]	2637.00	-0.67	.51	-0.05
7. Relaxation	3.27 (0.80)	3.56 (0.80)	-0.25	[-0.50, 0.00]	2258.00	-2.10	.04*	-0.17
8. Attentional control	3.25 (0.48)	3.27 (0.61)	0.00	[-0.25, 0.25]	2720.50	-0.35	.73	-0.03
Competition								
1. Goal setting	3.51 (0.73)	3.68 (0.61)	0.00	[-0.25, 0.00]	2496.50	-1.20	.23	-0.10
2. Automatically	3.27 (0.97)	3.47 (0.76)	-0.25	[-0.25, 0.00]	2534.00	-1.05	.30	-0.09
3. Emotional control	3.10 (0.86)	3.12 (0.76)	0.00	[-0.33, 0.33]	2760.00	-0.20	.84	-0.02
4. Imagery	3.25 (0.66)	3.80 (0.68)	-0.50	[-0.75,-0.25]	1533.00	-4.85	.00*	-0.40
5. Activation	3.57 (0.75)	3.69 (0.56)	0.00	[-0.25, 0.25]	2606.50	-0.78	.44	-0.06
6. Self-talk	3.62 (0.83)	3.62 (0.58)	0.00	[-0.25, 0.25]	2699.00	-0.43	.67	-0.04
7. Relaxation	3.29 (0.74)	3.54 (0.63)	-0.33	[-0.34, 0.00]	2259.50	-2.11	.04*	-0.17
8. Negative thinking	2.95 (0.68)	3.28 (0.67)	-0.25	[-0.50, 0.00]	2038.00	-2.93	.00*	-0.24

Note: M = Mean; SD = Standard Deviation; CI = Confidence Interval; r = Effect Size.
*$p < .05$.

Table 2 Comparisons of psychological skills used during training and competition in professional golfers and amateur golfers

Psychological skills	Training		Competition		Median Difference	95% CI	Z	*p*	r
	Negative Ranks		Positive Ranks						
	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks					
Professional golfers (n = 75)									
1. Goal setting	31.13	840.50	36.72	1505.50	-0.17	[-0.33,0.00]	-2.03	.04*	-0.17
2. Automatically	34.97	1189.00	24.65	641.00	0.13	[0.00,0.25]	-2.04	.04*	-0.17
3. Emotional control	39.59	1465.00	34.33	1236.00	0.09	[-0.04,0.21]	-0.63	.52	-0.05
4. Imagery	34.40	1410.50	29.11	669.50	0.13	[0.00,0.25]	-2.51	.01*	-0.20
5. Activation	33.83	203.00	35.11	2212.00	-0.75	[-0.88,-0.63]	-6.02	.00*	-0.49
6. Self-talk	32.46	876.50	28.89	953.50	0.00	[-0.125,0.13]	-0.29	.77	-0.02
7. Relaxation	35.00	1260.00	38.00	1368.00	-0.08	[-0.21,0.08]	-0.30	.76	-0.02
8. Attentional control / Negative thinking	32.05	1282.00	27.40	548.00	0.25	[0.125,0.38]	-2.72	.00*	-0.22
Amateur golfers (n = 75)									
1. Goal setting	38.18	1794.50	36.31	980.50	0.17	[0.09,0.25]	-2.19	.02*	-0.18
2. Automatically	31.60	1074.50	29.06	755.50	0.00	[0.00,0.13]	-1.19	.23	-0.10
3. Emotional control	34.74	1216.00	36.26	1269.00	0.00	[-0.13,0.13]	-0.15	.87	-0.01
4. Imagery	35.84	896.00	33.72	1450.00	-0.13	[-0.25,0.00]	-1.71	.08	-0.14
5. Activation	19.88	159.00	38.05	2397.00	-0.63	[-0.75,-0.5]	-6.44	.00*	-0.53
6. Self-talk	32.87	1249.00	34.36	962.00	0.13	[0.00,0.13]	-0.92	.35	-0.08
7. Relaxation	33.55	1442.50	39.77	1113.50	0.08	[-0.09,0.21]	-0.94	.34	-0.08
8. Attentional control / Negative thinking	32.69	1111.50	33.34	1033.50	0.00	[-0.13,0.13]	-0.25	.79	-0.02

Note: CI = Confidence Interval; r = Effect Size.
*p < .05.

Table 3 Comparisons of psychological skills used during training and competition sessions between experienced and inexperienced golfers

Psychological skills	Inexperienced golfers (n = 60) M (SD)	Experienced golfers (n = 90) M (SD)	Median Difference	95% CI	Mann-Whitney U	Z	*p*	r
Training								
1. Goal setting	3.63 (0.67)	3.51 (0.61)	0.33	[0.00, 0.34]	2440.00	-1.01	.31	-0.08
2. Automatically	3.47 (0.80)	3.61 (0.54)	0.00	[-0.25, 0.25]	2493.00	-0.80	.42	-0.07
3 Emotional control	3.01 (0.78)	3.17 (0.59)	0.00	[-0.25, 0.00]	2380.50	-1.24	.22	-0.10
4. Imagery	3.44 (0.83)	3.61 (0.72)	-0.25	[-0.50, 0.00]	2286.00	-1.60	.11	-0.13
5. Activation	2.97 (0.66)	2.86 (0.74)	0.00	[0.00, 0.25]	2526.50	-0.67	.50	-0.05
6. Self-talk	3.59 (0.75)	3.68 (0.73)	0.00	[-0.25, 0.25]	2489.00	-0.82	.42	-0.07
7. Relaxation	3.40 (0.90)	3.43 (0.74)	0.00	[-0.25, 0.25]	2688.50	-0.04	.97	0.00
8. Attentional control	3.27 (0.54)	3.25 (0.55)	0.00	[-0.25,0.25]	2647.00	-0.21	.84	-0.02
Competition								
1. Goal setting	3.49 (0.65)	3.66 (0.69)	-0.25	[-0.25, 0.00]	2227.50	-1.83	.07	-0.15
2. Automatically	3.47 (0.95)	3.31 (0.82)	0.25	[0.00, 0.50]	2334.00	-1.41	.16	-0.12
3. Emotional control	3.12 (0.88)	3.10 (0.76)	0.00	[-0.33, 0.33]	2609.50	-0.35	.73	-0.03
4. Imagery	3.57 (0.76)	3.50 (0.70)	0.00	[-0.25, 0.25]	2601.50	-0.38	.70	-0.03
5. Activation	3.59 (0.69)	3.66 (0.65)	0.00	[-0.25, 0.25]	2590.50	-0.42	.67	-0.03
6. Self-talk	3.37 (0.75)	3.79 (0.64)	-0.50	[-0.50, -0.25]	1790.50	-3.52	.00*	-0.29
7. Relaxation	3.37 (0.73)	3.45 (0.68)	0.00	[-0.33, 0.33]	2553.00	-0.57	.57	-0.05
8. Negative thinking	3.16 (0.62)	3.09 (0.74)	0.25	[0.00, 0.50]	2603.50	-0.37	.71	-0.03

Note: M = Mean; *SD* = Standard Deviation; CI = Confidence Interval; r = Effect Size.
*p < .05.

Discussion

The Use of Psychological Skills During Training and Competition in the Professional Golfers and the Amateur Golfers

Although the previous study found that low-skilled and highly-skilled golfers performed similar psychological skills (Arsal, 2013), the present study research showed that the amateur golfers had significantly higher scores of goal setting, imagery, and relaxation used during training than their professional counterpart (p < .05). Moreover, during the competition, the amateur golfers showed significantly higher scores of imagery, relaxation, and negative thinking than those of the professional golfers (p < .05). It was noteworthy that imagery and relaxation techniques were the primary elements of psychological skills used by the amateur golfers while the decrease in negative thinking was mainly executed by the professional golfers. Therefore, this may be the reason

that professional golfers show good performance during competition. Cohen et al. (2006) found that the PST enhanced emotional self-regulation skills and improved golf performance.

The Use of Psychological Skills during Training and Competition in the Professional Golfers

From the results, the professional golfers showed higher scores of goal setting and activation but lower scores in automaticity, imaginary, attentional control, and negative thinking during competition compared with those of the training ($p < .05$). In agreement with Thomas and Over (1994) examining the psychological and psychomotor skills associated with performance in golf, they found that the skilled golfers had greater mental preparation, a higher level of concentration when playing golf, less negative emotions and cognition, greater psychomotor automaticity, and more commitment to golf than low-skilled counterparts. This study found that during competition, the professional golfers used goal-setting and activation technique greater than during training session ($p < .05$). The golfers who had high scores of goal-setting and activation in training session had lower score of negative thinking in competition. It is possible that their competing is performed under a process goal which focuses on actions that can provide effective performance. Tongtanunam, Muangnapoe, and Salee (2017) reported that Thai elite professional golfers have strategies to solve problems during the game of golf by focusing on the moment, the process of making the shot and the task performance as well as trying to control the pressure. Nevertheless, the present study found that the professional golfers had more significant scores of psychological skills during training than those of the competition ($p < .05$). Since the professional golfers have more practice on a golf driving range and with a round of golf, they could possibly recognize self-management on the golf course and easily use the imagery in a real situation. However, the use of imaginary skills in the professional golfers gradually decreased throughout the competition. According to a study examining the extent to which psychological skills are used at three different periods before competition, it was found that time-to-competition effects showed imagery use decreased steadily across the three time points. Furthermore, performance outcomes might be affected by the schematic structure of a selected course of actions that stabilize the motor representation structure in the long-term memory and the priming of neutral pathways governing the execution of action (Hagan et al., 2017)

The Use of Psychological Skills during Training and Competition in the Amateur Golfers

The present study found that the amateur golfers had significantly higher score of activation technique of psychological skills during the competition than during the training ($p < .05$). This is in agreement with previous study which postulated that the activation technique was one of the methods that most athletes used to build self-confidence (Cox, 2012). However, score of goal setting technique used in the competition was lower than during training session ($p < .05$). It is possible that the amateur golfers may focus on the goals and consider the result after the competition has ended. Jordan, Vella, Allen, and Magee (2016) stated that the athletes reporting low or moderate levels of motivation had higher levels of competition anxiety, which was related to lower levels of mental toughness. Besides, there is no indication of a higher athletic tendency especially when competing. In addition, the results showed higher score of negative thinking in the competition. Previous study suggested that athletes should reinforce the role of automaticity in fostering the experience of high performance in a competitive sports context (Bert Hayslip & Petrie, 2014).

The Use of Psychological Skills during Training and Competition in the Experienced and the Inexperienced Golfers

Our study showed similar psychological skills performed in both the experienced and inexperienced golfers during practice and competition. However, the approach or steps used gave different results. Overall, when competing, the focus was on breathing control, imagery, relaxation, positive thinking and talking, pre-shot routine and focus on the shot. Previous research has clearly shown that unlike amateur golfers, professional golfers used a different technique of psychological skills to succeed in competition because golf is their career. Most professional golfers learned mental skills from sports psychologists (29.30%) whereas amateur golfers received psychological training from sports psychologists (12%) and most of them watched movies and listened to music for mental relaxation. However, most golfers had different cognitive process and feelings when the situation changed from training to competition. In the tournament, there is high expectation for the golfers to win the match or to get a better player ranking at the end of the competition, so that puts pressure on the golfers. In contrast, their regular training program has no pressure so it is fun and relaxing. Although the experienced and inexperienced golfers performed similar psychological skills, the techniques used were different during training and competition. The experienced golfers would follow the program prescribed by a sports psychologist, but some aspects may vary depending on individual coaches. Generally, they used breathing exercise, imagery, relaxing, positive thinking, positive talking, pre-shot routine and focusing on the ball impact. Regarding a previous study on Thai golfer's psychological characteristics, golfers used a variety of techniques such as self-talk, imagery, thought stopping, meditation and breathing control as psychological techniques (Thongtanunam, Muangnapoe, & Salee, 2017). Although psychological skills have been studied extensively, evidence on PST may not be compared to our study since steps and techniques used for training and characteristics of the golfers may be different among studies. Therefore, promoting PST in Thai golfers would help to develop their performance and gaining a better ranking overall. Further research may study on the issues of PST for golfers who require to improve the psychological fitness or each variable such as gender, age, experience and level of performance.

Conclusion

The present findings demonstrated that both professional and amateur golfers needed better psychological skills during competition than training. Moreover, the experienced golfers in psychological skills had higher scores of self-talk than those of the inexperienced counterparts. Overall, both professional and amateur golfers performed similar psychological techniques during golf tournaments including breathing control, imagery, relaxation, positive thinking, positive talking, pre-shot routine and focusing on the ball at impact.

Conflict of Interest

There is no conflict of interest.

References

Arsal, G. (2013). *Investigating skilled and less-skilled golfers' psychological preparation strategies: The use of a think-aloud cognitive process-tracing measure.* (Unpublished doctoral dissertation). Florida State University, Florida, FL.

Bert, H. Jr., & Petrie, T. A. (2014). Age, psychological skills, and golf performance: A prospective investigation. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *69*(2), 245–249. doi: 10.1093/geronb/gbt010

Bois, J. E., Sarrazin, P. G., Southon, J., & Boich, J. C. S. (2009). Psychological characteristics and their relation to performance in professional golfers. *The Sport Psychologist*, *23*, 252–270.

Cohen, A. B., Tenenbaum, G., & English, R. W. (2006). Emotions and golf performance: An IZOF-based applied sport psychology case study. *Behavior Modifi cation*, *30*, 259–280.

Cox, R. H. (2012). *Sport psychology: Concept and applications* (5th ed.). New York, NY: McGraw–Hill.

Finn, J. (2008). An introduction to using mental skills to enhance performance in golf: Beyond the bounds of positive and negative thinking. *International Journal of Sports Science & Coaching*, *3*(1), 255–269. doi: 10.1260/174795408785024270

Frey, M., Laguna, P., & Ravizza, K. (2003). Collegiate athletes' mental skill use and perceptions of success: An exploration of the practice and competition settings. *Journal of Applied Sport Psychology*, *15*(2), 115–128.

Hagan, J.E. Jnr., Dietmar, P., & Thomas, S. (2017). Exploring temporal patterning of psychological skills usage during the week leading up to competition: Lessons for developing intervention programmes. *PLoS ONE*, *12*(8), e0181814. Retrieved from https://doi.org/10.1371/journal.pone.0181814

Katsikas, C., Agreotaki, P., & Amirniotou, A. (2009). Performance strategies of Greek track and field athletes: Gender and level difference. *Biology of Exercise*, *5*(1), 29–38.

Kemarat, S., & Kemarat, C. (2016). *Golf psychology* [Mimmeograph]. Bangkok, Thailand: Professional Golf Association of Thailand.

Nicklaus, J. (1976). *Play better golf, king features*. New York, NY: Pocket.

Pokard, P. (2014). *Psychological performance profile of professional Thai soccer players*. (Doctoral dissertation), Burapha University, Chonburi, Thailand.

Rice, A. (2013). *The golf swing and time*. Retrieved from https://www.andrewricegolf.com/andrew-rice-golf/2013/03/the-golf-swing-and-time

Jordan, S., Vella, S., A., Allen, M. S., & Magee, C. A. (2016). Competition anxiety, motivation, and mental toughness in golf. *Journal of Applied Sport Psychology*, *28*, 309–320.

Thomas, P. R., & Over, R. (1994). Psychological and psychomotor skills associated with performance in golf. *The Sport Psychologist*, *8*(1), 73–86.

Thomas, P. R., Murphy, S. M., & Hardy, L. (1999). Test of performance strategies: Development and preliminary validation of a comprehensive measure of athletes' psychological skills. *Journal of Sports Sciences*, *17*(9), 697–711.

Thongtanunam, D., Muangnapoe, P., & Salee, S. (2017). Psychologial characteristics of Thai elite professional golfers. *Journal of Faculty of Physical Education*, *20*(2), 62–72.

Walker, M. (2015). *The importance of mental strength in golf 3: Strategies to develop tour toughness*. Retrieved from https://www.golfmentalgamecoach.com/the-importance-of-mental-strength-in-golf-3-strategies-to-develop-tour-toughness/