

Determining the Effectiveness of Personalized Versus Prescribed Self-Talk on Athletic Performance for Elite and Novice Athletes

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Abstract An athlete's performance can be influenced in positive and negative ways by what and how they think (i.e. their self-talk). While there is evidence indicating that self-talk can influence performance it is not clear if the level an athlete has achieved in their sport influences the effect that self-talk has on their performance and/or what type of self-talk is of greatest benefit to them. The present study investigated if personalising self-talk makes it more effective than prescribed words in relation to enhancing an athlete's performance and if this effect differs between novice and elite Taekwon-Do athletes. It was found that for elite athletes 'personalised' self-talk enhanced performance whereas 'prescribed' self-talk was detrimental to performance; however for novice athletes the relationship was less clear. The factors that influenced the relationship between self-talk type and the performance of elite and novice athlete are discussed.

Keywords: sport psychology, self-talk, mental skills, Taekwon-Do

1. Introduction

1.1. Self-Talk

The factors that can influence an athlete's performance are multidimensional (i.e. physiological, emotional and cognitive) and therefore mental skills to help manage these factors can enhance an athlete's performance. A mental technique which is frequently used in sport settings is self-talk [13].

Self-talk is a multidimensional phenomenon that refers to what a person is saying to themselves [7,9,18]. As described by Hatzigeordiasdis, Zourbanos, Mpoumpaki and Theodorakis [11], self-talk is based on the principle that what people say to themselves influences their behaviour [5] and is a technique central in cognitive behavioural modification [16] wherein treatments are designed to change individual's thoughts, interpretations and behaviours [12].

As a cognitive technique, self-talk is designed to help individuals control and organize their thoughts. Within a sporting context, self-talk can benefit an athlete's performance by facilitating attentional focus, correcting bad habits, increasing energy, improving skill acquisition, enhancing mood, promoting optimistic expectations, enhancing self-efficacy, and increasing motivation [21,23]. As a strategy for enhancing task performance in sport [12] self-talk has been promoted as a key component for successful sport performance and is often an integral part of psychological skills training programmes [8,11]. Research into the influence of self-talk on sporting

performance has received considerable attention in recent years [11] with results demonstrating its beneficial effectiveness in facilitating learning and improving task performance [11,23].

While much of the research on self-talk has looked at the impact this technique has on performance in terms of regulating an athlete's mental and emotional states (e.g. psyching-up, relaxation, focus, arousal level) [7] and influencing specific skill execution [14,15], less is known about how best to match such techniques to athletes in order to maximize its effectiveness. As stated in Hatzigeorgiadis, Zourbanos, Galanis, and Theodorakis' meta-analysis of the self-talk literature [12], self-talk has been shown to be an effective strategy for learning and enhancing performance, however more information is needed regarding the influence of variables such as the selection of self-talk cues and athlete experience level. For example, while there is evidence indicating that self-talk can influence performance it is not clear if tailoring (i.e. personalising) self-talk for athletes would improve their performance more than other types of self-talk or if personalising self-talk would influence the performance of elite and novice athletes differently.

1.1.1. Personalising Self-Talk

As the use of self-talk is intended to help the athlete control their thoughts, the words or phrases used should be clear and relevant to the athlete in that they help them to focus on the task at hand, relate to what they are trying to achieve and how they are trying to achieve it. When choosing what self-talk to use, athletes therefore need to select words or phrases that are meaningful to them

because words that work for one person may not work for another.

If self-talk words are not meaningful to an athlete they could be ineffectual or even detrimental to their performance. For example, if the self-talk words an athlete is using hold no meaning or relevance for them they will be less inclined to use them. Furthermore, if the self-talk words are not relevant to the athlete, using them could harm their performance by distracting them from what they are trying to achieve and/or decreasing their self-belief and motivation. To increase the effectiveness of self-talk, personalised words the athlete has developed or selected would therefore be of greater benefit than generic (i.e. prescribed) words provided by other sources (e.g. from a coach, instructors, Sport Psychologist, Mental Skills Trainer etc.).

While there has not been a direct comparison as to whether freely-determined (i.e. personalised) self-talk is most effective, as suggested by Hardy [7], based on Deci and Ryan's Cognitive Evaluation Theory [4] it is likely that freely-determined self-talk would have the most beneficial influence on performance as it would support an athlete's intrinsic need to feel personally competent and self-determinant resulting in increased motivation, confidence and feelings of control [7].

1.1.2. Athlete Skill Level and Self-Talk

While it is likely that personalising self-talk would enhance its meaningfulness and therefore effectiveness, to be able to develop personalised self-talk an athlete requires a good understanding of themselves as well as their sport which could vary depending on their level of experience. For example, it could be expected that a higher level of self-awareness is more likely to occur in elite than novice athletes as they have had more experiences from which to learn from and from which to develop feelings of competence [4] and efficacious beliefs [1,2,3,7]. It could also be expected that the greater level of knowledge, experience and self-belief that elite athletes have would enable them to develop more effective self-talk than novice athletes.

Although self-talk has been shown to be effective across many athletic levels [12] it is not clear how the level an athlete has achieved in their sport influences the effect that self-talk has on their performance as no studies have addressed the issue of self-talk on performance across different skill level [20]. Furthermore, no studies have investigated the influence of 'personalised' and 'prescribed' self-talk on the performance of elite and novice athletes.

The purpose of the present study was therefore to determine if personalising self-talk words makes them more effective than 'prescribed' words and furthermore to determine if the effect of 'personalised' and 'prescribed' self-talk differs between elite and novice Taekwon-Do athletes.

2. Materials and Methods

2.1. Participants

Sixty athletes were recruited from the International Taekwon-Do Foundation of New Zealand (ITFNZ) (elite

athletes: $n = 30$, mean age 21.7 ± 5.7 years; years trained 11.3 ± 4.1 ; novice athletes: $n = 30$, mean age 23.3 ± 6.9 years; years trained 4.1 ± 1.7). Athletes were categorised as 'elite' if they had a black-belt (1st-4th degree), trained primarily for competitive reasons, and had competed at both a national and international level. Athletes were categorised as 'novice' if they were recreational athletes of colour-belt blue, red-stripe, red or black-stripe grades who trained primarily on a recreational level and may have competed at a regional or national level. The recruitment of participants and all study procedures were approved by the University's Human Participants Ethics Committee.

2.2. Identifying Personalized Cue Words

On the day of testing, participants undertook a pre-testing interview in which they were asked to provide words to describe how they felt and/or what they were focusing on when executing the kick. From these descriptions two 'personalised' cue-words were identified and confirmed with participants as representing an ideal kick. These words were used during the 'personalized' kicking trial.

2.3. Measures of Performance

The influence of self-talk on performance was assessed by measuring the impact force of kicks as well as participant feedback.

2.3.1. Impact Force

The kicking task used was the standard sidekick which is a fundamental Taekwon-Do technique that allows for the athlete to execute each kick with full power. Kicks were aimed at an Adidas 'Electronic Body Protector' (EBP) which measures impact force. The EBP was mounted on a static free-standing bag weighted down and supported to prevent movement. Each sidekick was executed in a standardised manner from a relaxed parallel ready stance without a run up, skip, step-in or jump. After each kick, a rest period of five seconds occurred so participants could reset themselves back to their standardised starting position.

Prior to the start of testing participants were given five minutes to warm-up and familiarize themselves with the set-up. Each kicking trial consisted of ten kicks against the mounted EBP. Participants began the testing session by performing their kicks without the use of self-talk (this was the baseline/'no' self-talk condition). The next two conditions ('prescribed' and 'personalized' self-talk) were carried out in a randomised order in order to prevent a practice effect. In the 'prescribed' self-talk condition the two cue-words 'accuracy' and 'speed' were used as these are commonly used by coaches and instructors as prompts for the sidekick. In the 'personalized' self-talk condition participants' cue-words generated during the pre-testing interview were used. Prior to carrying out the 'prescribed' and 'personalized' self-talk conditions participants were briefed on how to internally recite their cue-words immediately prior to each kicking performance. Prompting of cue-words was done before every second or third kick in order to prevent distracting participants. Prompting was delivered in the form of repeating cue-words for the participant followed by the prompt to kick.

The impact force of each kick was measured by the EBP and transmitted to a laptop.

2.3.2. Participant feedback

Immediately following the sets of kicks for each self-talk condition participants were asked “Overall, how well would you say you performed those last ten kicks?” while being shown a Likert scale on which they were asked to grade how well they felt they performed from 1 (*extremely poorly*) to 10 (*excellent*).

At the completion of all three conditions participants completed two questionnaires. The first questionnaire asked participants to rate their performance for each type of self-talk, indicate if they noticed any change in their kicking between the three conditions, indicate if their kicking felt different between the three conditions, and indicate which type of self-talk they preferred. The second questionnaire was the Self-Talk Use Questionnaire (STUQ) [9] which assesses the multidimensionality of self-talk across three dimensions (valence, structure and overtness) as well as how/why self-talk is used.

3. Results

3.1. Effect of Self-Talk on Kicking Performance

Self-talk influenced the performance of both elite and novice Taekwon-Do athletes. How the different types of self-talk influenced performance was clear for elite athletes but less clear for novice athletes as results varied if missed kicks were included or excluded from the analyses.

3.1.1. Missed Kicks

As the EBP records the impact force of kicks, any kicks that were not registered by the EBP were regarded as being zero as they were not strong enough to register an impact. A non-registered kick would likely occur due to such things as poor technique/execution of the kick which could be influenced by how/what the athlete was thinking (i.e. their self-talk). For both the elite and novice athletes the number of kicks not registered by the EBP were similar for the ‘no’ and ‘personalised’ self-talk but higher for the ‘prescribed’ self-talk condition. For elite athletes the mean numbers of kicks missed were: 12% for ‘no’ self-talk, 15% for ‘prescribed’ self-talk and 11.3% for ‘personalised’ self-talk. For novice athletes the mean number of kicks missed were: 29.7% for ‘no’ self-talk, 31.3% for ‘prescribed’ self-talk and 29.3% for ‘personalised’ self-talk.

3.1.2. Impact Force

For elite athletes it was found that ‘personalised’ self-talk enhanced performance as the impact force of kicks were significantly higher compared to the ‘no’ self-talk condition. In contrast, ‘prescribed’ self-talk was detrimental to performance as the impact force of kicks were significantly lower than those of the ‘no’ self-talk condition. These results were significant regardless of whether missed kicks were excluded ($F(1.46, 371.88) = 94.54, p < .01$) or included ($F(1.34, 399.95) = 14.09, p < .01$) (see Figure 1a and 1b).

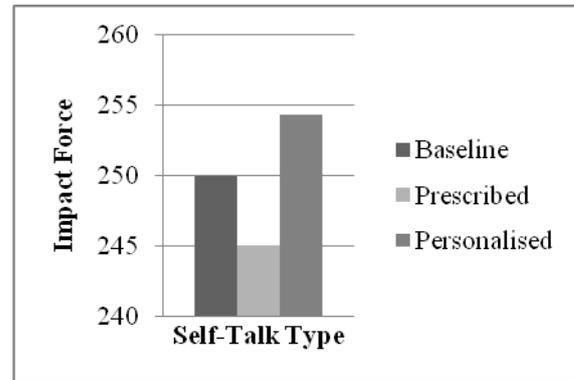


Figure 1a. Elite athletes mean impact scores with missed kicks excluded

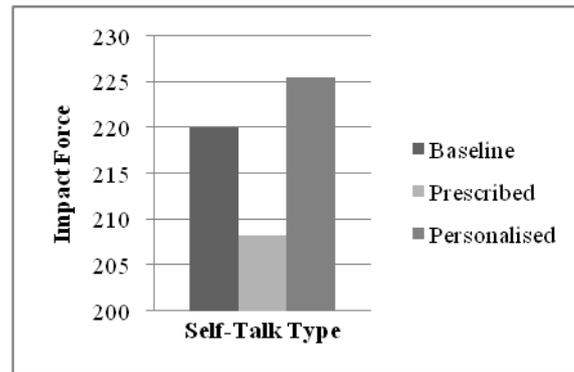


Figure 1b. Elite athletes mean impact scores with missed kicks included

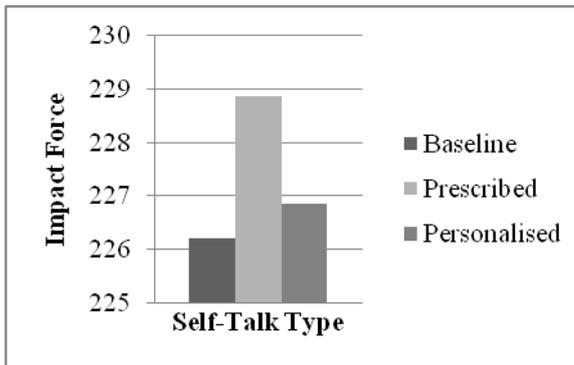


Figure 2a. Noviceathletes mean impact scores with missed kicks excluded

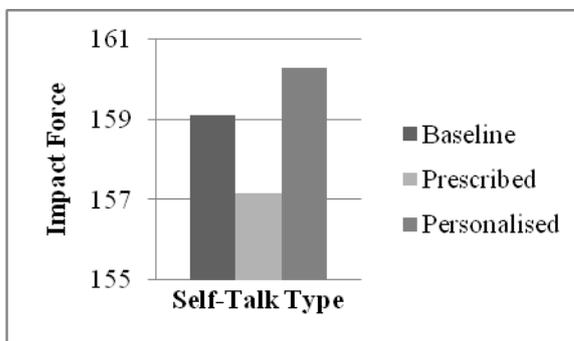


Figure 2b. Noviceathletes mean impact scores with missed kicks included

For novice athletes the use of ‘personalised’ self-talk was found to improve performance but this effect did not reach significance. In contrast to elite athletes, for novice athletes ‘prescribed’ self-talk significantly enhanced performance compared to ‘no’ self-talk when missed kicks

were excluded ($F(1.54,315.71)=130.21, p<0.001$) but was detrimental, although not significantly, to performance when missed kicks were included (see Figure 2a and 2b).

3.2. Perceived Influence of Self-Talk

Similar results were found for elite and novice athletes regarding the influence of the different self-talk conditions on their performance as well as when/how they used self-talk.

3.2.1. Rating of Performance

For elite athletes a significant difference was found in relation to their perception of which type of self-talk was most beneficial to their performance ($F(1.30,37.58) = 15.39, p < .001$) with mean scores for the self-rating of their performance being higher when they used ‘personalized’ self-talk (7.07 ± 1.24) compared to ‘prescribed’ self-talk (6.32 ± 1.46) or ‘no’ self-talk (5.93 ± 1.25). Similarly, for novice athletes a significant difference was found in relation to their perception of which type of self-talk was most beneficial to their performance ($F(1.54,44.55) = 9.78, p < .01$) with mean scores for the self-rating of their performance being higher when they used ‘prescribed’ self-talk (6.77 ± 1.10) compared to ‘personalised’ self-talk (6.63 ± 1.21) or ‘no’ self-talk (5.90 ± 0.87).

When asked if they noticed any change in their kicks between the three conditions, 100% of elite and novice athletes indicated ‘yes’. When asked if their kicking felt different between the three conditions 100% of elite athletes and 96.7% of novice athletes indicated ‘yes’ (3.3% of novice athletes indicated ‘no’).

With regard to what type of self-talk participants preferred, when asked “which condition did you prefer”, most participants preferred the use of ‘personalised’ self-talk. It was found that 63% of elite participants and 53% of novice participants preferred ‘personalized’ self-talk, 33.3% of elite participants and 43.3% of novice participants preferred ‘prescribed’ self-talk set, and 3.3% of elite and novice participants preferred using ‘no’ self-talk.

Table 1. Participants’ scores on the STUQ for the type of self-talk they used

	Elite Athletes	Novice Athletes
Valence Dimension		
Positive	48.50%	51.47%
Neutral	28.50%	24.17%
Negative	23.17%	25.03%
Structure dimension		
Single words	26.43%	27.17%
Phrases	47.33%	41.33%
Complete sentences	31.15%	33.17%
Overtiness dimension		
Overt	9.88%	12.30%
Semi-overt	26.76%	22.23%
Covert	65.66%	66.13%

3.3. Self-Talk Use

Scores on the STUQ dimensions of valence, structure and overtiness indicated that the majority of self-talk used by elite and novice participants was positive compared to neutral or negative self-talk, was phrases rather than complete sentences or single words, and was covert rather than semi-overt or overt (see Table 1).

Similarities were also found between elite and novice participants for how and why they used self-talk. It was found that elite and novice participants used self-talk more before and during competitions for a variety of functions including psyching-up, controlling nerves and helping focus (see Table 2).

Table 2. Participants’ scores on the STUQ for how and when they used self-talk in practice (Prac.) and competition (Comp.) settings

	Elite Athletes		Novice Athletes	
	Prac. Mean (SD)	Comp. Mean (SD)	Prac. Mean (SD)	Comp. Mean (SD)
Before	4.07 -1.7	6.63 -1.92	4.17 (1.95)	6.63 -2.06
During	5.83 (1.58)	7.23 -1.55	5.47 -1.8	6.5 (2.1)
After	4.33 (1.79)	5.14 -2.2	3.87 (1.98)	4.97 (2.3)
Individual skills function	5.53 (1.59)	5.37 -2.13	5.4 -1.79	5.83 (1.66)
Strategies/plays/routines function	5.46 (1.74)	5.67 -1.65	5.87 -1.8	5.93 (1.7)
Psyching-up function	6.17 (2.12)	6.33 -2.2	5.73 (2.18)	6.5 (2.21)
Relaxation function	5.37 (1.94)	5.63 -1.75	4.17 (2.12)	4.97 (2.16)
Nerve control	5.4 -2.16	6.3 -1.78	4.9 -1.97	5.8 (2.3)
Focus function	6.37 (1.73)	6.2 -1.9	5.83 (1.82)	5.9 (1.88)
Self-confidence function	5.33 (1.99)	6.1 -2.01	5.23 (2.24)	5.7 (2.17)
Mental preparation function	5.93 (1.74)	6.5 -1.87	5.4 -1.94	6.2 (2.07)
Coping function	5.8 -1.88	6.13 -1.91	5.37 (1.96)	5.7 (1.93)
Motivation function	6.07 (1.53)	6.2 -1.86	5.53 (1.96)	5.93 (2.05)
Effort control function	6 -1.53	6.23 -1.59	5.27 (1.91)	5.43 (2.01)
Goal function	5.53 (2.05)	6.03 -2.01	5.5 -2.05	5.7 (1.95)

4. Discussion

As stated by Hatzigeorgiadis et al. [12], while there are strong indications that self-talk is an effective strategy for facilitating learning and enhancing performance, more information is needed regarding the influence of variables such as the selection of self-talk cues and athlete experience level. To further clarify the influence of these variables, the present study was undertaken to determine if personalising self-talk words makes them more effective than ‘prescribed’ words in relation to enhancing an athlete’s performance and furthermore to determine if the effect of ‘personalised’ and ‘prescribed’ self-talk differs between elite and novice Taekwon-Do athletes.

4.1. Beneficial Effect of Personalising Self-Talk

In the present study we found that for elite and novice athletes the self-talk words they chose (i.e. 'personalised' self-talk) facilitated their performance whereas those they did not (i.e. 'prescribed' self-talk) were detrimental to their performance. This was demonstrated by the findings that the impact force of kicks were lower and kicks were more frequently executed poorly (i.e. being un-detectable to the EBP) when 'prescribed' self-talk was used. In contrast, the impact force of kicks were highest when 'personalised' self-talk was used (this result was significantly higher for the Elite group). The beneficial effect of using 'personalised' self-talk was also reflected in participants' perception of their performance and their self-talk preference as the majority of the elite and novice athletes preferred 'personalised' self-talk and felt their performance was better when using this type of self-talk. The beneficial effect of using 'personalised' self-talk is consistent with Deci and Ryan's Cognitive Evaluation Theory [4] in that because the 'personalised' self-talk words were chosen by the athletes they would have enhanced their feelings of competence and self-determination. Such feelings would increase the athlete's motivation, confidence and feelings of control [7] as well as their sense of self-efficacy [1,2,3] thereby improving their execution of the Taekwon-Do kick.

An important aspect of self-talk is its cognitive function in that it can facilitate processes such as concentration, focus, attentional control and information processing [10], [13]. The finding that 'prescribed' self-talk had a detrimental influence on kicking performance may have occurred because the 'prescribed' words were not developed by the athletes and therefore they may have been distracting to them thereby interfering with their ability to concentrate/focus and execute the kicking task. This finding is consistent with the findings of Thornton and Peters [19] that self-talk has the potential to interfere with motor activity by overloading the mental resources of an individual and removing them from present-focused attention.

To ensure that self-talk is beneficial and not detrimental to an athlete's performance it is therefore important that those working with the athlete (e.g. coach, instructors, Sport Psychologist, Mental Skills Trainer, etc.) help them to develop words or phrases that are meaningful to them in order to maximize the benefit of this technique.

4.2. Differences between Elite and Novice Athletes

In the present study we found that 'personalised' self-talk was beneficial to performance whereas 'prescribed' self-talk was detrimental to performance for both elite and novice athletes, however these findings were only significant for the Elite group. The difference in our findings for elite and novice athletes may relate to the fact that elite athletes are more experienced in their sport which could influence their ability to develop effective self-talk as well as how self-talk affects their performance.

Compared with novice athletes, elite athletes are more likely to have a greater awareness and understanding of the many factors that can influence their performance

(positively and negatively) which could enhance their feelings of competence, self-determination [4] and self-efficacy [1,2,3]. This greater level of knowledge and experience would therefore enhance their ability to develop meaningful, and hence effective, 'personalised' self-talk. In contrast, novice athletes are learning about their sport and themselves and therefore have not had sufficient experiences to be able to develop the strong sense of competence [4] or self-efficacy [1,2,3] required to develop personally-meaningful and effective self-talk. Furthermore, because novice athletes may not know as much about their sport or the subtle aspects of specific skill execution and are therefore notable to develop effective 'personalised' self-talk they are more reliant on 'prescribed' self-talk from others (e.g. coach, instructor, Sport Psychologist, Mental Skills Trainer, etc.). This reliance on 'prescribed' self-talk could be problematic as the findings from the present study indicate that this type of self-talk may be detrimental to their performance.

5. Conclusion

In the present study we found that personalising self-talk enhanced the sporting performance of Taekwon-Do athletes whereas using 'prescribed' words was detrimental to their performance. While these results were found for both elite and novice athletes, the findings were only significant for the Elite group thereby indicating that the experience level of an athlete can influence the effectiveness of techniques such as self-talk.

These findings demonstrate that while it is well established that self-talk can influence an athlete's performance, it is important that the words or phrases the athlete is using have meaning for them in order to not only enhance the effectiveness of this technique but also to reduce the possibility of self-talk being detrimental to their performance. Furthermore, the influence of the athlete's sporting experience should be taken into consideration when working with them on techniques such as self-talk as the level an athlete has achieved in their sport can influence their ability to develop and use this skill effectively.

The beneficial effect of 'personalized' self-talk we found in the present study may have occurred because these words were selected by the athletes and therefore because they were meaningful to the athlete they facilitated their concentration and skill execution. In contrast, the detrimental effect of 'prescribed' words may have occurred due to these words interfering with the athlete's focus/intent. To successfully execute a sporting performance the athlete needs to concentrate on the appropriate aspects of the task [17] and therefore, if the self-talk words used by the athlete are not familiar to them or do not accurately reflect what they are trying to do they could be detrimental to their performance by interfering with their motivation, focus, concentration and task execution. In order to increase the likelihood of self-talk being effective, it would therefore be beneficial to tailor self-talk words to each athlete so that the words or phrases they use have meaning for them.

These findings have important implications for those working with athletes (e.g. coaches, instructors, Sport Psychologists, Mental Skills Trainers, etc.) in that while it

is often easier to provide an athlete with words and cues to help them execute a performance, helping them to develop the skills, self-awareness and strong self-efficacy to develop self-talk that they find meaningful could be of greater benefit to them. This is especially true for novice athletes who are learning a sport, or a specific aspect of their sport, because they do not have the knowledge of themselves or their sport that would enable them to develop appropriate and meaningful self-talk words and therefore they require assistance in the development of these skills.

While the findings of this study contribute to the self-talk literature as well as the small body of research that has looked into performance enhancement in combat sports and martial arts such as Taekwon-Do [6,22], more studies are needed. Future studies need to further investigate the influence of personalising self-talk as well as the influence that athlete experience has on the development and use of self-talk so that those who work with novice and elite athletes are better informed with regard to how best to facilitate the development and use of mental skills techniques such as self-talk.

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