Impact of Verbal Feedback on Repeat Sprint Performance

Bailey P. Clawson

Oklahoma State University

Honors College & College of Education and Human Sciences

Department of Kinesiology, Applied Health and Recreation

Author Note

There are no known conflicts of interest to disclose.

Correspondence should be sent to Bailey Clawson via email: bailey.clawson@okstate.edu

Special thank you to Dr. Jay Dawes and Dr. Doug Smith for their mentorship throughout this research process.

Abstract

INTRODUCTION: Verbal feedback is often used in sports by coaches, trainers, etc. to improve an athlete's ability to perform their given tasks. However, little research has been conducted to confirm that an athlete's performance will improve a significant amount when verbal feedback is given. Therefore, this study was completed in order to determine how significant the relationship between verbal feedback and an athlete's ability to accomplish a given task to the best of their ability was. **METHODS:** Participants individually completed two sessions of ten 20-meter sprints, one session where feedback was given and another where no feedback was given. 20-meter sprint times from both sessions were collected and averaged for 12 (8 males; 4 females) competitive club athletes belonging to 3 different teams in this study. These times were collect along with anthropometric information of the participants (age, height and weight). A descriptive statistical analysis and paired T-test of the recorded times was applied in order to determine the significance of the given feedback and the athlete's ability to maintain or improve sprint time. **RESULTS:** Results of the descriptive statistical analysis showed that feedback given to the athletes did encourage a significant decrease in sprint times as opposed to the sprint times without feedback (w/ feedback= 3.545 $\pm$ .244 and w/o feedback= 3.623 $\pm$ .242). A paired T-test showed a significant difference as well (t=-2.489, p=.030). **DISCUSSION:** This data provides information that supports the claim that verbal feedback can in fact improve an athlete's ability to perform a task. **PRACTICAL APPLICATION:** Coaches, trainers and/or other professionals working with athletes may find this information persuasive in encouraging them to incorporate verbal feedback in their coaching or training styles during practices and performances with the athletes they preside over.

The Relationship Between Repetitive Sprints and Verbal Feedback

Introduction

In most athletic circles, motivation is a key element of training and improved performance. Coaches and trainers find themselves saying encouraging phrases and providing information to motivate their athletes to run faster, jump higher and compete harder. Often these coaching and training techniques are done almost innately, possibly as an emotional response to the circumstances. However, more investigations are required to determine how different types of feedback impact athletic performance.

Providing athletes with instantaneous feedback of how they have performed a given task gives them a knowledge of their performance results. This feedback can be provided as qualitative (verbal encouragement) or quantitative (number representing time, velocity, etc) feedback. Both have been shown to increase performance outcomes, especially when used together (Kilduski & Rice, 2003). Moreover, our understanding of the motor learning theory offers substantial information that feedback has an impact on gaining skills and increasing performance (Carpenter & Bilodeau, 1967). Research on this topic has been performed in a variety of settings including resistance training over a long period of time (Randell et al, 2011) and rowing (Filippeschi et al, 2011), yet this topic is lacking research in a setting where a participant would need to maintain or increase his or her performance in a single session. This would require the participant to almost immediately apply the feedback given to increase his or her performance.

Finding simple strategies to improve athletic performance is a primary concern for most coaches and athletes. Therefore, the purpose of this study was to investigate the impact of verbal feedback on repeat sprint performance among competitive club sport athletes. It was

hypothesized that providing knowledge of results related to sprint performance would have a positive impact on average sprint times.

Methods

Participants

Eight male participants (mean age $= 21.7 \pm 3.53$ yrs; mean height $= 176.8 \pm 7.86$ cm; mean weigtht $= 190.9 \pm 38.55$ lbs) and four female participants (mean age $= 22.4 \pm 4.62$ yrs; mean height $= 153.3 \pm 29.27$ cm; mean weight $= 132.2 \pm 10.78$ lbs) participated in this study. They were all recreational athletes from Oklahoma State University's competitive sport club teams (women's soccer, men's rugby, men and women's quidditch). Because of their competitive sport status, they were considered well trained. They were all healthy and capable of participating after completing a Physical Activity Readiness Questionnaire (PAR-Q). Oklahoma State University's institutional review board approved this experiment. There were no known risks associated with this project, which are greater than those ordinarily encountered in daily life or performing moderate to vigorous physical activity. However, this moderate to vigorous physical activity could have caused shortness of breath, increased heart-rate, or muscle soreness but these occurrences should not have lasted for a long duration of time, which all subjects were informed of the procedures and potential risks involved before they gave their written consent to participate.

Procedures

The first of two sessions began with the participant completing a consent form, PAR-Q, COVID-19 release form and anthropometric measurements (height and weight). The testing at both sessions included a 10-minute dynamic warm-up that focused on activating the lower body. Subjects then performed ten maximal effort sprints over a 20-meter distance individually. A

twenty second rest was taken in between each sprint. Before each sprint, they were given the countdown of "3,2,1" after which they proceeded to run the sprint. The time began as the athlete tripped the first timing gate and ended when they crossed the second device at 20 meters. Each sprint was recorded to the nearest 0.01 seconds. Approximately 72 to 96 hours after the first testing session, athletes returned to the testing site to perform the second testing session. In total, the participant committed to two sessions - the first lasting approximately 1 hour to allow for time to review and sign the informed consent form and other releases, and the second session lasted 45 minutes. Verbal feedback on individual sprint performance (i.e. individual sprint time) was immediately provided after each sprint and other positive encouragement was given during one testing session, and withheld (i.e., no information regarding sprint time or positive encouragement) during the other session. The order of these sessions for each participant was randomized in order to minimize the impact of order effect. Individual sprint times for each session was collected. Two averages were calculated for each participant – one for their ten sprints with feedback given and one for their ten sprints without feedback. Average sprint times for each session were calculated for analysis.

Results

Descriptive statistics are displayed in Table 1. Significant differences between repeat sprint trials (Feedback= 3.45 ± 0.224, No Feedback= 3.623 ± 0.242). The paired sample T-test showed significant differences in performance (t=-2.489, p=0.030). A Cohen's d analysis also revealed large differences (-0.718) between groups favoring the feedback group. See Table 2 and Figure 1 below.

Table 1

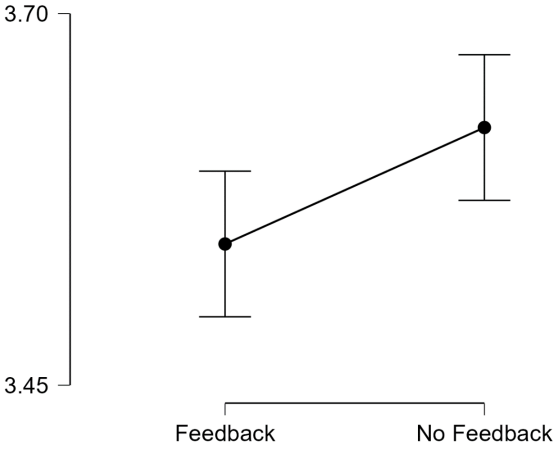
Descriptive Statistics		
	Feedback	No Feedback
Valid	12	12
Missing	2	2
Mean	3.545	3.623
Std. Deviation	0.244	0.242
Minimum	3.230	3.190
Maximum	4.050	4.080

Table 2

Paired Samples T-Test					
Measure 1	Measure 2	t	df	p	Cohen's d
Feedback	- No Feedback	-2.489	11	0.030	-0.718

Note. Student's t-test.

Figure 1



Discussion

The purpose of the present study was to determine the significance of verbal feedback on athlete performance. We expected to see a decrease in sprint time in trials where feedback was provided to the athlete due to previous research on instantaneous feedback given to improve performance (Randell, et al, 2011) and the basic knowledge and experience of how verbal feedback from leaders tends to naturally reinforce improvements in the execution of a skill. By completing this study, we were able to provide data that supports this theory that verbal feedback can be applied quickly and can improve an athletes' ability to improve performance in their specific sport. All statistical analyses that were computed supported this claim (see tables 1 & 2).

In this study, feedback during every feedback sprint trial included the participant receiving their sprint time for the individual trials. However, they sometimes received outside encouragement from teammates that were present like “good job!” or “keep pushing!” during both feedback trials and non-feedback trials. As investigators, we also often provided information like “only three more sprints left, let’s go” during both feedback trials and non-feedback trials. However, because encouragement was similar in both sessions, the only difference being the knowledge of results (i.e. sprint time), we can assume that the knowledge of results was the main reason for the difference between the trials with feedback and those without.

Additionally, it is important to consider how participants were impacted by performing their sprints in front of their teammates and after potentially hearing their teammates sprint times. This may have impacted sprint performance. While this study and findings add to the overall understanding of how verbal feedback can improve an athlete’s performance, it would be beneficial to continue research on this area of study. Future research could better single out the feedback given and the environment of the testing to ensure that no other variables are effecting the results. Besides verbal feedback, future research could even continue determining the impact of visual motivation on athletes.

References

Carpenter, F., & Bilodeau, E. A. (1967). Acquisition of skill. *American Educational Research Journal*, *4*(1), 80. https://doi.org/10.2307/1161728

Filippeschi, A., Ruffaldi, E., & Korman, M. (2011). Preliminary evaluation of timing training accelerator for the Sprint Rowing System. *BIO Web of Conferences*, *1*, 00025. https://doi.org/10.1051/bioconf/20110100025

Kilduski, N. C., & Rice, M. S. (2003). Qualitative and quantitative knowledge of results: effects on motor learning. *The American journal of occupational therapy: official publication of the American Occupational Therapy Association*, *57*(3), 329–336. https://doi.org/10.5014/ajot.57.3.329

Randell, A. D., Cronin, J. B., Keogh, J. W., Gill, N. D., & Pedersen, M. C. (2011). Effect of instantaneous performance feedback during 6 weeks of velocity-based resistance training on sport-specific performance tests. *Journal of Strength and Conditioning Research*, *25*(1), 87–93. https://doi.org/10.1519/jsc.0b013e3181fee634