

EFFECT OF NON-ATHLETE YOUTH PSYCHOLOGICAL CHARACTERISTICS ON THE REQUEST OF FEEDBACK TYPE AND LEARNING

Navid Hadadi¹, Mehdi Namazizadeh^{2*}, Pouneh Mokhtari³

¹Department of Physical Education and Sport Sciences, Science and Research Branch, Islamic Azad University, Tehran, Iran

²Department of Physical Education and Sport Sciences, Khorasgan Branch, Islamic Azad University, Isfahan, Iran

³Department of Physical Education and Sport Sciences, Tehran Central Branch, Islamic Azad University, Tehran, Iran

*Corresponding Author, E-mail: drnmamazi@yahoo.com

ABSTRACT

In the present study we examined the impact of psychological characteristics of young non-athletic boys on the selection of the type of feedback and its impact on learning. To achieve this goal, 40 male students of Science and Research Branch of Islamic Azad University with the mean age of 22-25 years were selected and were divided into four experimental groups after completing the questionnaire dealing with separation of subjects based on selecting the type of feedback. The first group, the feedback-seeking group after good trials, that the researcher gives them feedback after good trials. The second group, the feedback-seeking group after good trials, that the researcher gives them feedback after poor trials. The third group is the feedback-seeking group that the researcher gives them feedback after poor trials. The fourth group, the feedback-seeking group after poor trials, that the researcher gives them feedback after good trials. The task involves throwing sand bags towards the specified goals on the ground. Two groups received feedbacks according to their needs and two other groups contrary to their needs and demands. The participants performed 10 blocks of 6 trials in the acquisition phase and they received feedback on 2 trials in each block in accordance with the goals of the experimenter. After 24 hours of the last training block, the retention test was performed. The results showed that two groups that received feedback according to their needs had a significantly better performance than the other two groups that received feedback contrary to their needs ($F=25.388$, $p=.001$).

KEY WORDS: Feedback, Learning, Non-athlete, Psychological characteristics.

INTRODUCTION

In recent years, attempts to clarify the role of augmented feedback and using its benefits aimed at reducing its negative effects have been studied. However, the existence of different results in these areas has made it difficult to determine the appropriate manner to provide feedback. Most researchers have introduced feedback as one of the most important variables of motor learning. Meanwhile KP has been considered as a key factor in the acquisition of motor skills. (Schmidt and Lee, 2011; Bruechert *et al.*, 2003; Wulf *et al.*, 1998; Swinnen *et al.*, 1997; Salmoni *et al.*, 1984). In order to explain the effects of KP on learning motor skills Salmoni *et al.* proposed the guidance hypothesis and stated that it ultimately causes the performer's dependency on the feedback in addition to the guidance effects of feedback during the practice. (Salmoni *et al.*, 1984). Many studies confirmed the guidance hypothesis (Salmoni *et al.*, 1984; Wulf and Schmidt, 1996; Young and Schmidt, 1992; Schmidt *et al.*, 1989; Butki and Hoffman, 2003) and they studied various methods for reducing the relative frequency of augmented feedback including Bandwidth KR, Summary KR, Average KR and Self-controlled KR to avoid the negative effects (Magil, 2011). More recently a new way of providing feedback called feedback after good trials or after poor trials by the experimenter (the coach) has caught the attentions of many researchers in the field of motor behavior with the goal of reducing the effects of feedback dependency (Badami *et al.*, 2011; Chiviawosky and Wulf, 2005, 2007). Chiviawosky and Wulf (2007), Badami *et al.*, (2011) stated that the feedback after good trials due to its greater incentive role provides a stable pace which is more useful for learning. Badami *et al.*, (2011) began to compare these two methods of feedback in a research and showed the feedback after good trials tends to have a greater impact on learning due to its greater incentive role. These findings were contrary to the view that feedback after large errors is of importance. These Scientific evidences with an emphasis on Lintern and Roscoe hypothesis showed that error information is more effective for the Implementation progress.

By doing a research on the participants and submitting a questionnaire about it to them Chiviawosky and Wulf (2005) found that participants are efficient in a relative determination of good and poor trials and they can identify good trials from the poor ones. It is important to take note of this issue because it highlights the importance of individual

differences on this issue. According to these results, it is expected that individuals would have different needs in receiving the feedback which is consistent with their inner needs. So it seems that some people tend to receive feedbacks of more motivating type but some tend to receive feedbacks with more informative role. The researches that have been done so far in this field were regardless of differences in internal needs of individuals for receiving feedback and its possible effects on results and randomly placed a number of participants in after good trials feedback group and put the other participants in after poor trials feedback group.

It is natural that a number of people in each group according to their intrinsic nature tend to receive more incentive feedback and some tend to receive more informative feedback and when they receive a feedback inconsistent with their internal desires and needs they are most likely to suffer from cognitive confusion and their learning process would be disordered.

As it is clear in the literature there has been no direct examination and measurement of this factor in any researches. Therefore, this study intends to examine the impact of participant's personal tendencies at the request of incentive or informative feedback and to show whether their performance would be better if feedback is given to people according to their internal needs.

MATERIALS AND METHODS

Participants

Forty male student (mean age = 24.32 years, SD = 2.47) participated in this experiment. They are studying at the Islamic Azad University Science and Research Branch. Participants had no prior experience with the experimental task and were not aware of our specific study purpose.

Procedure

First, the questionnaires used for separating the participants were distributed among a number of students according to the need to receive the feedback. After completing the questionnaire an in-person interview of the participants was organized about their tendencies to receive the certain type of feedback. Finally, 20 people who wished to receive a feedback after successful performances and 20 people who wished to receive a feedback after poor performances were selected. Any of these groups are randomly divided into two groups of 10 people. In other words the four research groups are:

1. The first group, the feedback-seeking group after good trials which the researcher gives feedback after good trial.
2. The second group, the feedback-seeking group after good trials which the researcher gives them feedback after poor trials.
3. The third group, the feedback-seeking group after poor trials that the researcher gives them feedback after poor trials.
4. The fourth group, the feedback-seeking group after poor trials, that the researcher gives them feedback after good trials.

How to provide feedback to the experimental groups in the first group follows as each 6 trial-block provides feedback to 3 trials of the best and most accurate trials in the end. In the second group follows as each 6 trial-block provides feedback to 3 trials of the poorest trials in the end. In the third group follows as each 6 trial-block provides feedback to 3 trials of the poorest trials in the end. And in the fourth group follows as each 6-trial block provides feedback to 3 trials of the best and most accurate trials in the end.

Apparatus

Demographic questionnaire

This questionnaire includes name, age, questions about their history of particular diseases, and the amount of their physical activity and...during the week.

The questionnaire used for the separation of groups based on tending to get more incentive and informative feedback

This questionnaire is given to the subjects at the beginning of the training protocol which includes questions about when or why the feedback is requested so it to determine that when and after which trials (their good and poor trials),

they tend to receive feedback (Retrieved from Chiviawski and Wulf , 2005).

Task

The apparatus, task, and procedure were similar to those used in previous studies (Chiviawski and Wulf, 2007; Chiviawski *et al.*, 2006, 2008). The task required participants to toss beanbags to a target placed on the floor, using their non-dominant arm. The target was circular, had a radius of 10 cm, and was placed at a distance of 3 m from the participant. Concentric circles with radii of 20, 30, 40, 50, 60, 70, 80, 90, and 100 cm were drawn around the target. These served as zones to assess the accuracy of the throws. If the beanbag landed on the target, 100 points were awarded. If it landed in one of the other zones, or outside the circles, 90, 80, 70, 60, 50, 40, 30, 20, 10, or 0 points, respectively, were recorded. If the ball landed on a line separating two zones, the participant was awarded the higher score. Also, the target was divided into four quadrants for the provision of KR. All testing took place during normal physical education class periods.

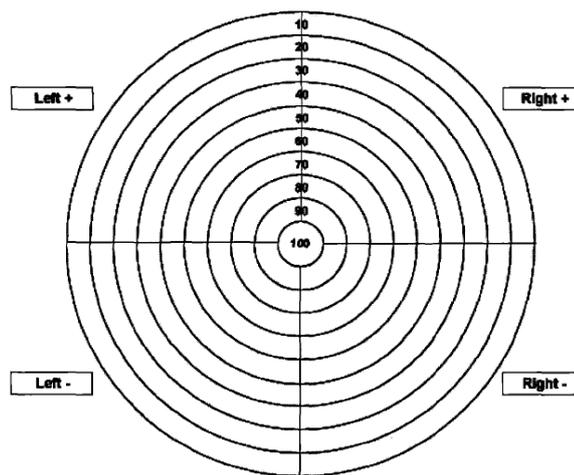


Figure 1. normal physical education class

Data Analysis

The scores obtained by the subject to the desired purpose were used to evaluate the performance of subjects in trial block and retention test. Initially, descriptive statistics was used to describe data and to compare one-way ANOVA test experimental groups.

RESULTS

As you can see in Figure 1 groups with similar requirements has started the training and all the four groups has progressed during the acquisition phase. This progress is according to a higher inner need for the two groups receiving feedback. In the retention phase the groups receiving the feedback outperformed the other two groups according to their inner needs.

Pretest

One-way ANOVA test in the pre-test phase showed no Significant differences between the study groups ($F=1.312$, $p=.285$). Thus, the research groups bore no difference at the beginning acquisition stages of throwing sandbags skills.

Acquisition

However one-way ANOVA test results showed Significant differences between groups in this stage ($F=5.320$, $p=.004$) that post hoc Tukey test showed that groups receiving the feedback according to their inner needs had no significant difference but they did better than the other two groups.

Retention

The results of one way ANOVA indicated no significant differences among the research groups $F=25.388$, $p=.001$ that post hoc Tukey test showed that groups receiving the feedback according to their inner needs had no significant

difference but they did better than the other two groups.

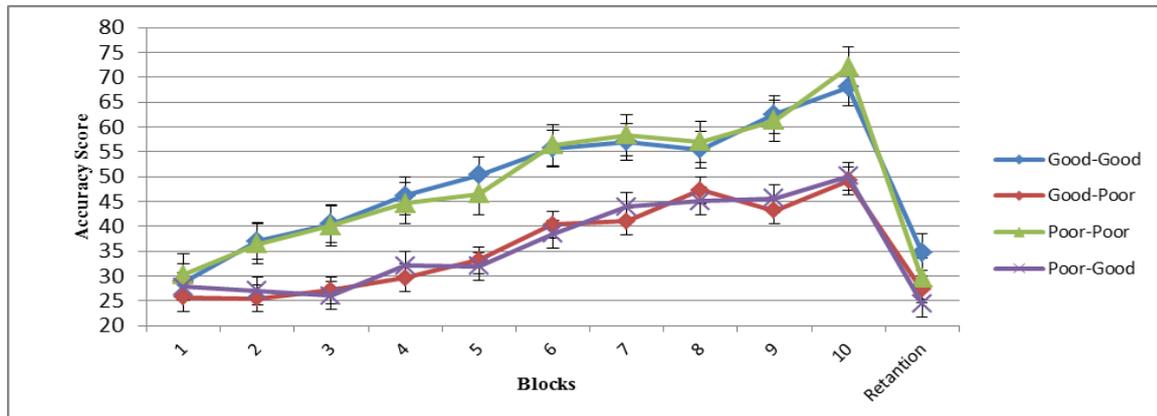


Figure 2. Performance of four groups in acquisition and retention phases

DISCUSSION

In this study the researcher examined the impact of psychological characteristics of non-athletic youth on selecting the type of feedback and its impact on the learning skills of throwing sandbags to the specific target on the ground and divided the subjects into four groups by a questionnaire as follows to determine the effect of these desires to receive feedback on the researcher learning:

1. Feedback seeking group after successful trials and receiving feedback according to their inner needs after successful trials.
2. Feedback seeking group after successful trials and receiving feedback contrary to the inner needs after successful trials.
3. Feedback seeking group after unsuccessful trials and receiving feedback according to the inner needs after unsuccessful trials.
4. Feedback seeking group after unsuccessful trials and receiving feedback contrary to the inner needs after successful trials.

The results showed that groups which received feedback according to their inner needs had a better performance than the other two groups which received feedback contrary to their inner needs, in the acquisition and retention stage.

The progress of all groups in the acquisition stage was a confirmation of the Guidance Hypothesis which states that the feedback during the acquisition stage guides the acquirer's skill toward the goal. Therefore this progress can be explained in four groups according to the guidance hypothesis. However significant differences among groups in the acquisition stage were of the critical points of this study. The two groups that received feedback according to their inner needs performed significantly better than the other two groups that received feedback contrary to their inner needs. These results were not in line with Chiviawski and Wulf (2009). The reason for this contradiction is providing a feedback according to the inner needs of the subjects so that they received what that they needed to better achieve the goal and analyzing their required and helpful information and applying it in the next trials, which lead to a better performance but the other two groups received something just different with their needs (requirements) to better achieve the goal so they suffered from a cognitive confusion and couldn't apply the received information in the next trial to better achieve the goal. This difference shows that the impact of these inner desires in choosing the type of feedback is so important that the difference will be revealed from the very first trials in the acquisition stage.

In the acquisition stage, the groups that received feedback according to their inner needs performed significantly better than the other groups that received feedback contrary to their inner needs. These findings show that providing an appropriate feedback in accordance with the needs of the subjects has a long term effects and subjects receiving feedback according to their needs had a better performance on retention test.

In the previous studies such as the studies of Chiviawosky and Wulf (2007, 2009), Sabzi *et al.*, (2012), Saemi *et al.*, (2012) the researchers divided the groups randomly regardless of individual differences in selecting the type of feedback and then started to examine the effects of feedback on learning after successful and unsuccessful trials. Some pointed to a more useful feedback after unsuccessful trials and some pointed to a more useful feedback after successful trials (Chiviawosky and Wulf , 2009 ; Saemi *f.*, 2012). Those who believe in the advantage of providing feedback after successful trials point to the incentive role of this type of feedback and state that the motivation to learn is more important. But those who point to the advantage of providing feedback after unsuccessful trials believe that the informative role of feedback after successful trials is more important in learning. The reason for this contradiction might be that the individuals must receive feedback based on their psychological characteristics which is which is an integral part in learning motor skills. This subject was addressed in this study and the results showed that they indicated a better performance when the feedback was given to them in accordance with their requirements than when the feedback was given to them in contrary to their needs and requirements both in the acquisition and retention stages and both incentive and informative roles in learning are of rather equal importance and the feedback type selection should be based on the desires and demands of the people.

REFERENCES

- Badami R., Vaez Mousavi M., Wulf G. and Namazizadeh M. (2011).** Feedback after good versus poor trials affect intrinsic motivation. *Res. Quarterly Exercise Sport.* 82(2): 360-364.
- Bruechert L., Lai Q. and Shea CH. (2003).** Reduced Knowledge of Results Frequency Enhances Error Detection. *Res. Quarterly Exercise Sport.* 74(4): 467-472.
- Butki BD. and Hoffman SI. (2003).** Effects of reducing frequency of intrinsic knowledge of results on the learning of motor skill. *Percept Motor Skills.* 97(2): 569-580.
- Chiviawosky S. and Wulf G. (2005).** Self-controlled feedback is effective if it is based on the learner's performance. *Res. Quarterly Exercise Sport.* 76(1): 42-48.
- Chiviawosky S. and Wulf G (2007).** Feedback after good trials enhances learning. *Res. Quarterly Exercise Sport.* 78(2): 40-47.
- Chiviawosky S., Wulf G., Iaroque de Medeiros F. and Kaefer A. (2006).** Learning benefits of self-controlled knowledge of results in 10- year- old- children. *Res. Quarterly Exercise Sport.* 79(3): 405-410.
- Chiviawosky S., Wulf G., Iaroque de Medeiros F., Kaefer A. and Wally R. (2008).** Self-Controlled Feedback in 10-Year-Old Children: Higher Feedback Frequencies enhance learning. *Res. Quarterly Exercise Sport.* 79(1): 122- 127.
- Magill RA. (2011).** Motor Learning and Control: Concepts and Applications. London: McGraw-Hill.
- Salmoni AW., Schmidt RA. and Walter CB. (1984).** Knowledge of results and motor learning: A review and critical reappraisal. *Psychol. Bull.* 95(30): 355-386.
- Schmidt RA., Young DE., Swinnen S. and Shapiro DE. (1989).** Summary knowledge of results for skill acquisition: Support for the guidance hypothesis. *J. Experimental Psychol.* 5(2): 352-359.
- Schmidt RA. and Lee TD. (2011).** Motor control and learning: A behavioral emphasis. IL: Human Kinetics publisher.
- Swinnen SP., Lee TD., Verschueren S., Serrien DJ. and Bogaerds H. (1997).** Inter limb coordination: learning and transfer under different feedback condition. *Human Movement Sci.* 16(6): 749-785.
- Wulf G. and Schmidt RA. (1996).** Average KR degrades parameter learning. *J. Motor Behavior,* 28(4): 371-381.
- Wulf G., Shea CH. and Matschiner S. (1998).** Frequent feedback enhances complex motor skill learning. *J. motor behavior,* 30(2): 180-192.
- Young D. E. and Schmidt RA. (1992).** Augmented kinematic feedback for motor learning. *J. Motor Behavior.* 24(3): 261-273.