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ORIGINAL RESEARCH

THE EFFECT OF THE DIFFERENT TYPES OF FEEDBACK ON THE VOLLEYBALL TRAINEES' INTERNAL IMPULSION.

Karolina Barzouka¹, Grigorios Malousaris¹.

¹Faculty of Physical Education and Sport Science

National and Kapodistrian University of Athens, Athens, Greece

Summary

In physical education there is a two-way relation between acquiring moving skills and the mechanisms of impulsion. The goal of the present text was to confirm the effect of this kind of model observation on the internal impulsion of the participants. Fifty three high school girls of 12-15 years old, separated randomly into levels, in three teams and practiced in one common intervention programme consisted of 12 practice sessions for the volleyball skill acquisition (the serve skill – ball reception). The participants of the 1st and the 2nd experimental teams were receiving as feedback a model observation, while all the three teams were receiving verbal instructions during the intervention programme. At the beginning and the end of the intervention the trainees fulfilled the questionnaire (Ryan 1982) for the internal impulsion. For the statistic process of the internal impulsion data, the method of fluctuation analysis with 2 factors (3X2) was used. The level of importance was defined as $p < 0.5$. The outcome demonstrated that no type of feedback influenced essentially the internal impulsion. There were only tendencies in favor of the second group.

Introduction

The impulsion is fundamental for every achievement. It is the centre of attention and the enthusiasm for people to do things, to fulfill their goals and to direct anything that tends to affect their progress. (Lock & Latham, 1990). The individual's goals lead directly the effort and the acts of the same person. Their defining, affects positively the person to perform better, as it leads and increases the attention and the concentration into his work. Furthermore, activates and motivates the individual to intensify the effort, increase the persistence, and offers an essential motive for the effort (Locke, Shaw, Saari, & Latham, 1991). An individual's actions that derive from the internal impulsion are the ones that are expressed for the joy and the satisfaction itself and not due to an exterior issue. According to Deci (1975), the factors that urge people, are separated in two categories and they are inner and outer. The innate human need to feel capable and independent in our own environment is the behaviour induced internally. It increases when the individual feels even more independent and capable at handling his own surroundings (Whaley, 1988), gets affected according to how provoking is the action (Deci & Ryan, 1985) and misses entirely if the person feels some kind of pressure or force (Deci & Ryan, 2000). The external impulsion derives from exterior sources in conjunction with positive or negative reinforcement such as praise, trophies and medals, public recognition, amounts etc... However, the use of the exterior motives might possibly lead to the increase of the stress (Papaioannou & Kouli, 1999).

The comprehended capacity is an effective regulator for the impulsion and generally, for the behavior towards athletic achievement (Roberts & Duda, 1984), because the ones who own a high perception of their athletic

ability and believe that they can acquire a skill, obtain feelings of success regardless of the objective outcome. They adopt a positive attitude towards the physical practice and therefore it is likely that they increase the possibilities of being occupied with a certain sport (Jourden, Bandoura, & Banfield, 1991).

The model demonstration as an urging factor has occupied the mind of the scientists to a large extent. A lot of writers refer to the positive effect of the model observation on the internal and the external impulsion and its contribution to the performance and the learning. In a similar survey, it was demonstrated that there are differences in the urging role of the model demonstration concerning the trainees' development while differences between the two sexes concerning the same issue were noted (Weiss & Bredemeir, 1983). In another experimental survey, where the model's effect on the learning was checked, the outcome demonstrated differences which derived from the model observation.

Little and McCoullagh, (1989), realised a relative survey, using the forehand skill's acquisition in the sport of tennis. The survey's purpose was to confirm the model observation's effect on the impulsion mechanisms, that is to say, on the cognitive, social and natural perceptible capacities, which intervene, in relation to the impulsion's direction. The results demonstrated statistically significant differences among the teams, not only towards the different guidance tactic their members were receiving, but also between the teams towards the two types of the impulsion.

For the observation's effect to be measured in the impulsion mechanisms, it was attempted to create a relative scale Harter (1981). Later, with this essay as a starting point, a scale of internal and external impulsion for young athletes was formed, which was consisted of six categories (Weiss, Bredemeier and Shewchuk 1985). The first category was designed to differentiate the athletes into those who preferred to plan the skills on their own, that is to say, into the ones internally urged and those who were choosing to accept help and instructions from external sources, to be specific those who were externally boosted. That differentiation defines the tendency and the athlete's choice on the skill. In addition to this, it defines the guidance method which according to their perceptions it will help them carry out their performance.

Focusing on the knowing of the performance during the teaching of a skill, was supposed to cause a better result to the trainees whose impulsion is internal. On the contrary, to the trainees whose impulsion is external, focusing on the knowing of the result will be more suitable.

In the survey realized by the researchers above, with the kids' practicing with high internal and external impulsion as the theme, in conjunction with the use of a model where the observation was focused on the knowing of the performance and the result simultaneously, the results confirmed to an extent the issue above. Moreover, a positive conclusion that was raised by that survey was that during the use of the model observation and examination of guiding techniques, the control is essential.

Method and Procedure

Fifty-three female high-school pupils aged 12 to 15 years old ($M=13.1$, $SD=0.89$) consisted the sample which was free from any previous experience in volleyball and was randomly assigned to three groups (1st experimental team (group 1): $n = 18$, 2nd experimental team (group 2): $n = 16$ and control group (C): $n = 19$). The necessary written approval for the participation in the survey was assured, which took place in the open courts of the school (not at school time). The serve skill were defined to be the learning task and they were taught at an intervention programme. The duration of the total practice session was 8 weeks and was instructed for 12 practice sessions at a frequency of 2 times per week. Participants in all three groups performed 4 kinds of drills with 10 repetitions for each drill. During this intervention phase, all groups received the same verbal instructions which referred to the performance information and the correction of the technical errors, according to each teaching unit. In the first teaching units the major errors were selected and in the next units, the details...

The model was a skilled aged-matched female athlete with 5 years of volleyball experience. Demonstration of the skill took place in every practice session in two periods (period 1 and period 2) of 90 sec. duration each. Every period included a total of 8 demonstrations of the skill from two different angles : from a front angle and from a side angle of 90°. Four demonstrations at a normal tempo (2 front and 2 side) and four at a slow tempo (2 front and 2 side). The slow tempo was defined as the 50% of normal tempo. In every practice session, period 1 occurred before the start of the session, while period 2 occurred in the middle of the intervention. After period 1, the 1st and the 2nd teams' participants performed two kinds of drills for 10 repetitions each, later they were receiving the second model demonstration again and then, they were performing two other drills for 10 repetitions each.

Group 1 received feedback through modeling observation simultaneously with verbal instructions, provided by means of videotaped demonstration of the skill by the model on a common colour TV monitor (VHS 21"). The verbal videotaped instructions, which were given by the physical education teacher referred to the key points of the skill and were related to the preparation phase, body positioning towards the target area of the ball, ball retention (not with the specific extremity that strikes), ball rising, ball strike and the participant's

movement follows the ball's direction.

Group 2 received feedback through simultaneous videotaped demonstration of the skill by the model and by the participants' correct own performance (self-modeling). This type of feedback along with verbal instructions from headphones was provided by means of individual monitors in a specially formed private space. The verbal instructions were the recorded voice of the physical education teacher and referred to correction of the most important individual errors. This was the reason that a special hall that was divided into 16 private areas was created. In each specially formed private space this type of feedback along with verbal instructions from headphones was provided by means of individual monitors (Philips 14'').

The following procedure was used to obtain each individual tape. Three repetitions of the skill performed by each participant at the end of every practice session were videotaped from a frontal and a side view angle of 90°. Then, the participant's correct own performance was selected, and an individual videotape was created with the aid of a custom-made software program in the laboratory. The videotape included the simultaneous demonstration of the model's performance (1st video) and each participant's correct own performance (2nd video). The two videos that had exactly the same dimensions appeared superimposed on the monitor. In this way, the difference between the model's correct performance and the participant's correct own performance could be observed. The verbal instructions referred to the correction of the participant's major individual errors from every updated videotaped performance of the skill.

The two videos had exactly the same dimensions and appropriate caution was taken so that performances of the skill were videotaped from fixed distances. In every convention, each participant was observing, together with the rest of the team, her own updated personal tape.

The control group's trainees were receiving as feedback only verbal instructions which were concerning the correct execution of the serve skill and the correction of the errors (traditional teaching).

The internal impulsion was measured through 20 questions which compose four different factors (Ryan, 1982). These factors are : stress-pressure, fun-interest, effort and comprehended capacity. To the factor «stress-pressure» relate the questions 5, 10, 14, 18 and 20. The questions 14 and 20 which reveal the stress restriction, the degrees are counted backwards. To the factor «fun-interest» relate the questions 1, 7, 8, 13, 17. To the factor «effort» relate the questions 3, 4, 6, 12 and 15, from which 12 and 15 are reversed. To the factor «comprehended capacity» relate the questions 2, 9, 11, 16 and 19 from which 11 is reversed. All 20 questions have as an answer a 5 degree scale by Likert, among the verbs «I totally agree – I totally disagree». The inner consistency of the questionnaire's Greek edition moved to satisfying levels (fun $\alpha = .81$, effort $\alpha = .70$ stress $\alpha = .72$, comprehended capacity $\alpha = .72$) (Goudas, Dermitzaki, Bagiatas, 2000) Furthermore, in a recent survey the questionnaire's structure was tested by a confirming factorial analysis (Papacharisis, Goudas, 2003). The indicators of the model were high $\chi^2 (123) = 246.55$, NFI = .931, NNFI = .946, CFI = .961 confirming this model's structure.

Results

For the best possible result conduct, the questions for the internal impulsion were grouped in four factors : a) Stress-Pressure b) comprehended capacity c) Effort d) Fun-Interest. In order to confirm possible statistically significant differences among the teams concerning the stress, an analysis of variance with one factor (team) was accomplished for the initial evaluation of the certain questionnaire. The outcome demonstrated statistically limited but essential differences among the teams ($F_{2,50} = 3,23$, $p < 0,05$). Subsequent to this, an analysis of co-variance occurred, by using the stress of the final measurement as the dependent variable and the teams of a different type of feedback as the independent variable. The results demonstrated that the factor «stress-pressure» in the initial measurement was regulating the differences among the teams concerning the same factor in the final measurement ($(F_{2,50} = 20,90$, $p < 0,00$).

After this definition, the differences among the three teams at the lineal synthesis of «stress-pressure» (final measurement) were not statistically significant. Afterwards, a control test took place for the existence of possible differences between the initial and the final measurement, concerning the stress. For this cause, an analysis of variance occurred, with 2 factors, from which one was the time (initial, final) and the other was the teaching method (team). According to the outcome of Table I, there were not statistically significant differences among the teams ($F_{2,50} = 0,63$, $p > 0,78$). Moreover, there wasn't a significant impact by the main time measurement, that is to say, by the initial and final measurement ($F_{1,50} = 0,09$ $p > 0,76$).

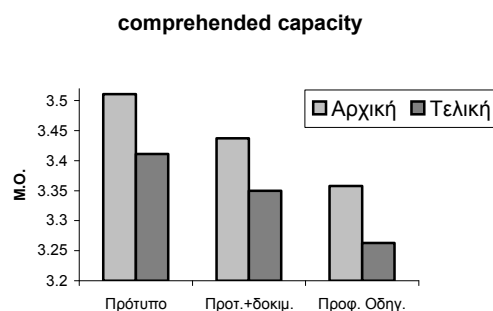
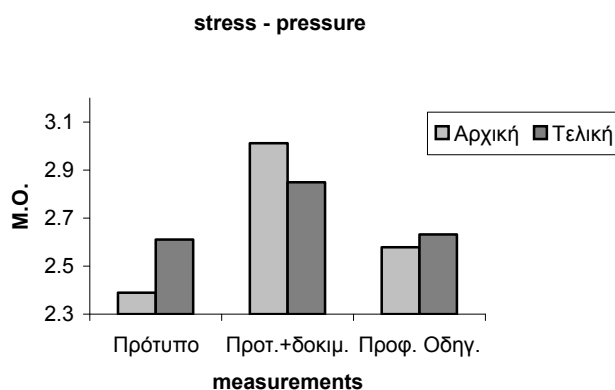
For the confirmation of possible great differences which relate to the comprehended capacity, the effort and the factor fun – interest among the teams, an analysis of variance with one factor (team) took place for the initial evaluation of the questionnaire's questions. The outcome demonstrated no significant differences among the teams for the «comprehended capacity» ($F_{2,50} = 0,34$, $p \geq 0,71$), the effort ($F_{2,50} = 1,47$, $p > 0,24$), and the fun – interest ($F_{2,50} = 0,12$, $p > 0,89$).

Later, a control test took place to examine the existence of possible differences between the initial and final measurement as far as the comprehended capacity, the effort, the fun – interest are concerned. For this purpose, an analysis of variance with 2 factors and repeating measurements took place. The first factor was the time (initial, final) and the second was the teaching method (team). Based on the Table I results, it seems that no statistically great differences among the teams in the comprehended capacity ($F_{2,50} = 0,00$, $p > 0,99$) occurred, neither in the effort ($F_{2,50} = 1,10$, $p > 0,34$) and the fun – interest ($F_{2,50} = 0,73$, $p > 0,49$).

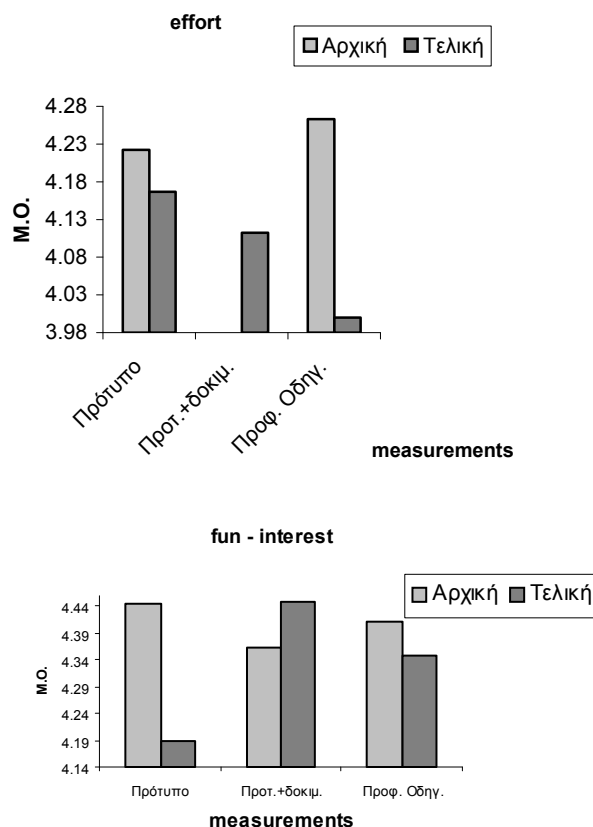
In addition, no great impact of the time measurement (initial-final) concerning the comprehended capacity ($F_{1,50} = 0,60$, $p > 0,44$), the effort ($F_{1,50} = 0,25$, $p > 0,62$) and the fun-interest ($F_{1,50} = 0,45$, $p > 0,50$) was found.

Table 1. The average amount and the regression of the four internal impulsion elements in relation to the three types of feedback

	1 st group (n=18)				2 nd group (n=16)				Control group (n=19)			
	Initial		Final		Initial		Final		Initial		Final	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Stress - Pressure	2,39	0,66	2,61	0,81	3,01	0,88	2,85	0,94	2,58	0,65	2,63	0,94
Comprehended capacity	3,51	0,55	3,41	0,97	3,48	0,68	3,35	0,84	3,36	0,45	3,26	0,62
Effort	4,22	0,43	4,17	0,92	3,96	0,68	4,11	0,74	4,26	0,54	4	0,82
Fun – Interest	4,44	0,41	4,19	0,91	4,36	0,42	4,45	0,55	4,41	0,59	4,35	0,88



Comparison between the initial (Αρχική) and the final measurement (Τελική)



Discussion

Based on the measurement's outcome during the final practise phase no great differences among the teams were found, referring to the factor stress – pressure. In addition to this, as far as each team separately is concerned, no significant differences in time between the initial and the final measurement were demonstrated. However, it must be noted that there was an increasing tendency in the first experimental group and the control group, while there was a diminishing tendency in the second experimental group. It is possible that the feedback in the form of model observation simultaneously with the trainees performance observation, has contributed to their stress reduction. Taken as a fact that the team's participants revealed tendencies of improvement in the serve skill, in the technique and the ball reception, one could cautiously claim that this type of feedback contributed to the stress reduction with the improvement of the performance as a subsequent.

Regarding the comprehended capacity, the results of all three teams' participants didn't reveal any great differences in any of the measurements. One might cautiously claim that the decreasing tendencies that concern this parameter for all the groups are due to the fact that the trainees' observing the model they were comprehending their dissimilarity with it. However, the perception of the athletic capability can be unstable (Fox & Corbin, 1989) and can be influenced by the way each individual perceives success or failure. It possibly associates to another term which is probably more stable, the perception of self-knowledge, the act of accepting one's self, his low or high capability. The comprehending ability of a number of unexperienced trainees is lower than that of the experienced ones as the first ones are unable to focus their attention on the skill's major aspects. Relative to the issue surveys showed that solely the feedback video affected more the experienced athletes than the beginners (Rothstein & Arnold, 1976, Rikli & Smith, 1980).

Also, the outcome in relation to the effort as a factor of an internal impulsion didn't demonstrate great differences among the groups. This means that no feedback tactic had any special impact on any team's participants. However, a positive tendency was presented in the 2nd experimental group and a dropping tendency for the 1st experimental group and the control group. Cautiously, we could exclude the conclusion that the type of feedback with model observation, the individual's performance and the supply of verbal instructions simultaneously, have influenced even more the trainees' effort in order to improve their skill performance. As mentioned by Lock & Latham,(1990), people's actions are headed mainly for their goals and their intentions. Defining the goals activates and motivates the individual, makes him intensify the effort, increase his persistence and gives him an essential motive for a further improvement. One could cautiously claim that the second team's participants, observing their gradual improvement, they had a good motive to intensify the effort

Finally, regarding the internal impulsion elements such as fun and interest, the outcome didn't demonstrate great differences among the teams. It was obvious however that an increasing tendency was observed for the 2nd group and a falling tendency for the 1st group and the control group. This outcome means that no feedback tactic had a serious impact on any of the teams' participants. Cautiously we could conclude that the type of feedback with model observation, the trainee's performance and the verbal instructions simultaneously influenced even more the members of a certain group through offering more fun and reinforcing their interest. To people of young age who prefer the internal impulsion and they care for the best possible execution of the skill, knowing the performance affects more than knowing the result. On the contrary, to kids whose impulsion is external, focusing on the knowing of the result will be more suitable as it creates a relation of dependence with sources of information outside (Little & McCullagh, 1989).

Concerning the comprehended impulsion Kavussanu and Roberts (1996) attribute to the term impulsion the figuration of goals which are proportionate to the each time different conditions. These consist of specific key-words relative to the skill guidance or a specific goal guidance that associates to an occasion (ex. Improvement of a skill at training time). In the research by Kavussanu and Roberts (1996) the interaction between the comprehended impulsion, the internal impulsion and the individual's performing state - efficiency was examined. Perceptions directed towards the skill were related to joy, while the effort, the comprehended capacity and the performance were related backwards depending on the intensity. To summarize, the more the participant was focusing the attention on achieving a skill, the greater the effort was and the joy out of it. On the contrary, an individual concentrated on the game's or the training's outcome, was receiving hardly enough joy out of the sport and tended to be impulsioned for different reasons. Butt and Cox state that top athletes reveal high degrees of impulsion on every level, as much during the participation as during the match in the sport of tennis. Finally, an athlete's surroundings define the reasons of the impulsion. Depending on the way athletes tend to define success and estimate their capability, they obtain more or less internal impulsion. (Duda, Chi, Newton, Walling & Cattle, 1995).

Conclusion

At the end of the intervention programme no significant differences in the factors of internal impulsion among the teams were demonstrated. The null supposition is accepted as there is no sufficient statistic ground to affirm that the 3 teams differ significantly the internal impulsion factors during the intervention programme's application. Consequently, no teaching method made a serious impact for the factors to be reinforced. Further research with a larger sample is suggested to be realised.

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Internal impulsion questionnaire						
First and last name:.....						
Class:..... Date:.....						
INSTRUCTIONS : For every sentence mark your answer						
	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally agree	
disagree or agree, the numbers mean :						
1= totally disagree 2= disagree 3= Neither agree nor disagree						
4= agree 5= totally agree						
Put in a circle the answer that represents you the most						
1. I like the volleyball training a lot	1	2		3	4	5
2. I think I perform well at practice	1	2		3	4	5
3. I put great effort on practice	1	2		3	4	5
4. doing well at practice is important to me	1	2		3	4	5
5. I feel stressed during practice	1	2		3	4	5
6. I work hard at practice	1	2		3	4	5
7. practice time is pleasant	1	2		3	4	5
8. I would say practice is very interesting	1	2		3	4	5
9. I am satisfied with my performance at practice	1	2		3	4	5
10. I feel pressure due to the practice schedule	1	2		3	4	5
11. I don't manage well the training	1	2		3	4	5
12. I don't put hard effort into practicing	1	2		3	4	5
13. when I practice I think of how much I like it	1	2		3	4	5
14. I am very calm at practice time	1	2		3	4	5
15. I am not concentrated when I execute the practice drills	1	2		3	4	5
16. I think I perform well at practice	1	2		3	4	5
17. training is an interesting experience	1	2		3	4	5
18. I feel nervous when I practice	1	2		3	4	5
19. most of the times I stand up to the training's challenges	1	2		3	4	5
20. I feel no stress during practice time	1	2		3	4	5

Reliability

Before the beginning of the programme, a test of internal consistency in two questionaries in order to confirm the similarity of the answers for every question concerning every factor and the coefficient **a** by Cronbach was calculated.



To be concrete, in the internal impulsion questionnaire the factors were : stress-pressure ($\alpha= .60$), fun-interest ($\alpha=.64$), effort ($\alpha=.61$), comprehended capacity ($\alpha=.59$).

Variables

The teams were defined as the independent variable

As the dependent variable :

- the trainees' stress – pressure
- the trainees' fun – interest
- the trainees' effort
- the trainees' comprehended capacity