

**REDUCING THE TECHNICAL ERRORS OF THE
STUDENTS TO THE RECEIVING THE BALL WITH TWO
HANDS FROM SERVE PROCEDURE IN THE GAME OF
VOLLEYBALL**

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Summary:

One of the most difficult problems confronted by specialists in this area of study is preventing and correcting technical mistakes of the students, as future teachers. This work approaches the problem in an innovative manner, i.e. by using support devices, which are designed to reduce not only the time requested for acquiring the kinesthetic skills and proficiency, but also to generate new exercise structures intended to continually reduce technical mistakes. By applying the auxiliary device “volleyball bangle”, we were able to reduce by about 30% technical errors in the execution of “receiving the ball with two hands from serve” procedure, in the game of volleyball.

Introduction:

The game of volleyball is a basic discipline where, after the plans of study, like in other sports games, the training period provided for this, after the Treaty of Bologna, has been reduced from 3 to 1 semester, that number hours was reduced from 112 to 56. It is a well known fact that the volleyball specific techniques and elements are much harder acquainted than those in other sports, because volleyball skills are based on elements that students do not initially have in their daily common experience history. This is the main reason for which it is essential that in volleyball, the training methods should be modern – training support devices that are designed not only to “accelerate” training, as a result from the Declaration of Sorbonne, but also to appeal students, to make them an active part of their own training.

The acquiring of technical procedures is delineated as a process of adaptive modification, which is systematic and relative durable for the requested kinesthetic behavior of a professional in sports, the basis of learning game techniques by students stand his own perception over the

surrounding events, followed by decisions adequately organized in given space and time, and depending on the individual predispositions and aptitudes.

T.O.Bompa [2, P. 54] observes that in learning we should pay attention to the following aspects of the technique:

- cinematic, external structure – or learning a skill
- dynamic, internal structure – or the physiological basis in performing a skill.

Hypothesis:

We started from the assumption that the device use “volleyball bangle” will help us to reduce technical errors in the “receiving the ball with two hands from serve ” procedure, of the students go through the basic sport “volleyball”. The purpose of the paper is to identify errors of execution, corresponding to component sequences of technical procedure “receiving the ball with two hands from serve ”, and correct them using auxiliary device “volleyball bangle”.

Method-material:

Analyzing other researches in the same area, we noticed that in order to comprehend in optimal conditions a technical procedure, it should be parted in its elementary parts which should be separately analyzed. Meanwhile these phases or sequences, as separated from the live technical procedure, can be illustrative for both the technical level acquired by the student, and the mistakes that the student makes during his performance; thus they’d do become a “truth mirror” for the assessing agent.

Therefore, seeking opinions of specialists in the field, we analyzed the video method, sequence, techniques pass with two hands down, identifying and quantifying the technical errors in the full implementation. As can be seen in table 1, we sought to techniques fragments in 5 sequences, fundamental in the proper execution of it.

Tabel 1. Technical procedure sequences in passing the ball with both hands from a low point

Technical procedure	Technical procedure sequences				
	Sequence I	Sequence II	Sequence III	Sequence IV	Sequence V
Receiving the ball with two hands from serve	Fundamental position	Movement	Catch	Arms work	The work with the other body segments

In the initial learning of a technical process, the formation representation psycho - motor is accompanied by significant deviations from the model biomechanics actions. This is the subject of many professionals in the field of research that seeks to prevent and remove even the most serious infringements which harm by distorting the shape and content of that action driving.

Technically speaking, the most important thing to do is to eliminate mistakes, their causes being complex and of a large variety. As A. Pacuraru [9, p. 42] emphasizes, the errors can be classified according to the action's sequences, and are based on the subject/subjects as mistake generators, as we have illustrated in Table 2.

Table 2. Technical mistakes tips by action phases

MISTAKES	FRECVENT SITUATIONS
DECISION MISTAKES	<ul style="list-style-type: none"> - The subject miss an opportunity - Wrong calculation, error of anticipating, error of appreciating
MOMENT MISTAKES	<ul style="list-style-type: none"> - The student miss a time defense action - He forget, don't see, or don't paying attention to an action - Wrong placement - Is disturbed by colleagues or equipment
MOUVEMENT MISTAKES	<ul style="list-style-type: none"> - The subject action is wrong - Wrong attitude in a particular situation

According to authors, as [1, 3, 4, 5, 6, 7, 8, 9, 10], the correcting of technical mistakes is only done individually by using methods of renewing the kinesthetic perception, which is based on the immediate information principle. The efficiency of this approach increases if the supplementary influence is transmitted simultaneously during the exercise session trough various means (visual, tactile or acoustic), composing an informational flow with multiple possibilities of action, accelerating mistakes correcting by a fast renewal of kinesthetic perceptions. Training support devices are genuine teaching accelerators if they are used and rationally in the phases of acquiring kinesthetic skills, together with exercises in less difficult conditions with a sequential approach to a specific technical procedure.

Starting from the premise that the using of the “volleyball bangle” device will be a factor of reducing technical mistakes for the students who attend the basic course of the sport subject “volleyball”, we started by performing an observation experiment in order to determine which are

the most frequent technical mistakes in the “receiving the ball with two hands from serve ” procedure.

Thus, for the first sequence, the fundamental position, the many mistakes in execution observed for the witness group (n=52) after the basic course where: the trunk too much bowed forth (3,85 %), the legs stretched in the knees joints (9,62 %), feet too close or too far (3,85 %).

For the second sequence, (1,92 %) from the students did not move effectively, according to the ball position, anticipating incorrectly the ball trajectory and (13,38 %) did not execute the stop before hitting the ball.

As for the third sequence, the “catch”, I observed that a rather large percent of the students (17,31%) performed a high catch, keeping their both hands fingers in extension, while (3,85%) did not align correctly their forearms as a consequence of touching one back and against the other.

Following the fourth sequence of the technical procedure of receiving the ball with two hands from serve, namely the arms work, we noticed that (13,46%) of the students touched the ball with the upper third of their forearms, (26,92%) raised their arms higher than their shoulders level during the execution and (13,46%) bent their arms from their elbow joints at the time off the ball contact.

For the fifth sequence – the work with the other body segments, (3,85%) of the students did not execute push using legs, (9,62%) did not link their legwork with the moment of hitting the ball, (11,57%) executed a lunge in the moment of the ball hitting.

As a consequence of observing these mistakes, the most frequent of them, inspired us to conceive a device in the form of a bangle fixed on the forehand of the student which, in the moment of the contact between the arm and the ball, it transmits a codified wireless radio signal towards a receiver placed nearby and which displays, through a computer with the specialized software, if the ball hit correctly (Pictures 1 and 2; Picture 1: 1 - three dimensional view of the contact sensor and fixing bangle, 2 - the bangle, 3 - to contact sensor, 4 - radio transmitter;

Picture 2: 1 - presentation of the radio signal transmission from the player to the computer).

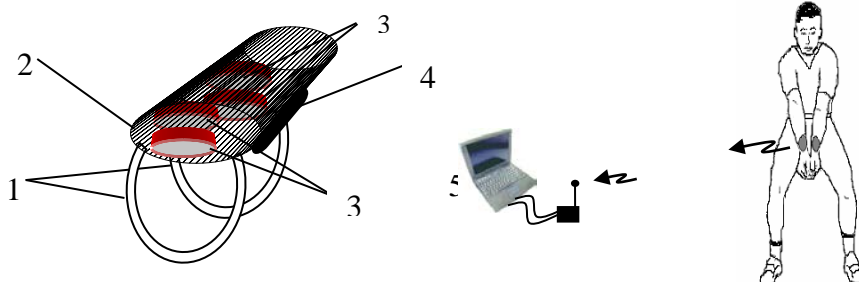


Figure. 1

Figure. 2

The device that we develop give the opportunity to the teacher to know the exact place where the ball come into contact with the student arms, if the subject hit the ball with the both hands in the same time and also permit to subject to realize and autocorrect execution by execution, making him to paying attention about the contact surface between ball and arms. One of the big advantage of this device is that solve problems with normal mistakes by bring them into attention both of the student and specialist, mistakes very difficult to noticed and identified until now.

Results:

After the appliance of the bangle to the experimental group (n=51) during practice lessons of volleyball, we observed during the testing performed that the technical mistakes were considerably reduced mostly for two phases: the catch and the arm work, as we can see in table 3 and figure 3.

Table 3. Comparison between the witness group and the experiment group

Technical procedure phases	Execution mistakes	Number of mistakes	
		Witness group	Experiment group
Fundamental position	the trunk too much bowed forth	2	2
	the legs stretched in the knees joints	5	3
	feet too close or too far	2	0
Movement	their feet staying on the floor while only their trunks and arms were tracing the ball	0	0
	did not move effectively, according to the ball position, not anticipating correctly the ball trajectory	1	2
	did not execute the stop before hitting the ball	8	6
Catch	high catch, keeping their both hands fingers in extension	9	3
	he foam to catch with superposed fingers or joined palms	0	0
	did not align correctly their	2	0

	forearms as a consequence of touching one back and against the other		
Arms work	the students touched the ball with the upper third of their forearms	7	1
	raised their arms higher than their shoulders level during the execution	14	5
	bent their arms from their elbow joints at the time off the ball contact	7	6
The work with the other body segments	the students did not execute push using legs	2	5
	did not link their legwork with the moment of hitting the ball	5	7
	executing a lunge in the moment of the ball hitting	6	7

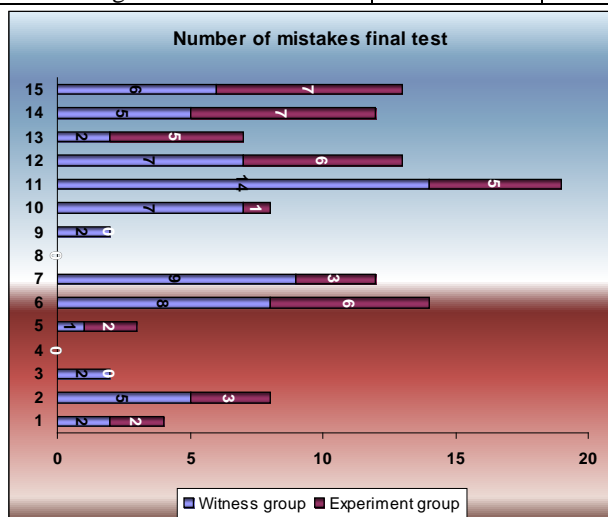


Figure 3. Comparative representation of technical errors in sequences: “catch” and “arm work”

Following the results presented in graphical form above you can see that acting, in addition to traditional means, the auxiliary device “volleyball bangle“, we obtained a decrease in the number of errors in the experimental group. Thus in the two sequences of technical procedure “receiving the ball with two hands from serve”, “catch” and “arms work” can see a noticeable difference between the arithmetic average of the two groups of students, the control group (n = 52) accounting for a total of 38 errors to the experimental group (n = 51) with only 21 errors.

Following the interpretation of data resulting from the study, we found a difference between the average final testing of the two groups of 0,43 mistakes of implementation, the control group obtaining an average

of 1,35, while the experimental group of 0,92, confirming that the experimental group and qualitative indicators endorsed at senior this technique. The amount of technical errors the control group was 70, unlike the experimental group that totaled only 47, with 33% less. Sequence that underwent the most significant reduction of technical errors was “arms work” where through the use of auxiliary device “volleyball bangle”, and this means adapted electronic device, the number of technical errors to the control group decreased from 28 to 15. This reduction in execution errors, not due solely using this electronic device, but rather is an amount of additional resources used, such as “hanging ball” and “ball rod”, used together with “volleyball bangle”.

Student test shows that between the two environments is no significant difference in initial testing, $t = 0,03$, as opposed to final testing, where $t = 2,53$, a significance threshold of $p < 0,05$, confirming so our hypothesis.

Table 4. Comparative results from two tests of the technique of execution of the procedure “receiving the ball with both hands from serve” between the control group (n = 52) and experimental group (n = 51)

RECEIVING THE BALL WITH TWO HANDS FROM SERVE															
X		± m				σ				t		p			
E		W		E		W		E		W		E/W		E/W	
I.T.	F.T.	I.T.	F.T.	I.T.	F.T.	I.T.	F.T.	I.T.	F.T.	I.T.	F.T.	I.T.	F.T.	I.T.	F.T.
9,4	0,9	9,4	1,3	0,2	0,1	0,2	0,1	1,9	0,8	1,5	0,8	0,0	2,5	>	<
7	2	6	5	7	2	2	2	2	7	8	8	3	3	0,0	0,0
														5	5

Legend: I.T. = Initial testing; F.T. = Final testing ; **E** – experiment group; **W** – witness group; \bar{x} = arithmetic average; **m** = standard error of the mean; σ = standard deviation; **t** – Student test; **p** - significance threshold.

Conclusions:

Using training devices make the lessons more pleasant and more various, stimulating the students to participate responsible and active to their own education, helping in the same time the teacher.

Very important to keep in mind is the fact: training devices could be introduced event to starting learning process, but is not indicate to subjects to work too much time to a device, because is forming motoric habituations broken from game conditions. Is very important also to mix the work to training devices with drill complexes.

Physical drills used on this devices, must be different and combined with contest elements, we must put the accent to using training devices linked into the technical and tactical complexes.

We believe that the results obtained are encouraged and we hope to step forward and pass some financial issues linked by application of this devices widely in high level institute of physical education and sport from our country in the future.

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Titlu: Reducerea greșelilor de tehnică a studenților la procedeul preluarea din serviciu cu două mâini de jos în jocul de volei.

Cuvinte cheie: volei, studenți, greșeli, aparate ajutătoare.

Rezumat: Una din cele mai mari probleme cu care se confruntă specialiștii domeniului este preîntâmpinarea și corectarea greșelilor de tehnică la studenți, viitoarele cadre didactice. Lucrarea de față abordează această problemă printr-o prismă nouă și anume cea a aparatelor ajutătoare, menite nu numai să scurteze perioadele necesare formării

deprinderilor și priceperilor motrice ci mai ales să genereze noi structuri de exerciții în continua încercare de a reduce greșelile de tehnică. Prin aplicarea aparatului ajutător „manșeta volei”, am reușit să reducem cu aproximativ 30% greșelile de tehnică la executarea procedurii „preluare din serviciu cu două mâini de jos” din jocul de volei.

Titre: Réduire les erreurs techniques de l'étudiant à la réception du ballon à deux mains de servir dans la procédure de servir dans le jeu le volley-ball.

Mots-clés: volley-ball, les étudiants, les dispositifs de correction des erreurs.

Résumé: L'un des problèmes les plus difficiles face à des spécialistes dans ce domaine d'étude est de prévenir et corriger les erreurs techniques des étudiants, futurs enseignants. Ce travail aborde le problème de manière innovante, par exemple en utilisant des dispositifs de soutien, qui visent à réduire non seulement le temps requis pour acquérir les compétences et la maîtrise kinesthésique, mais aussi de générer des structures nouvel exercice destiné à réduire continuellement les erreurs techniques. En appliquant le dispositif auxiliaire de volley-ball, nous avons été en mesure de réduire d'environ 30% des erreurs techniques dans l'exécution de procédure de "recevoir le ballon à deux mains de servir", dans le jeu de volley-ball.