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STUDY OF THE BASKETBALL AND VOLLEYBALL THEMATIC UNIT BASED ON THE STUDENTS' PERFORMANCE

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ABSTRACT. The aim of our research is to assess the students' performance within the teaching units can be found in the syllabus. The benefit of the new method modeled by us is to give a detailed and comprehensive picture about the students' load ability, endurance (individually), as well as make the students' evaluation easier. At the same time it facilitates to confirm the efficiency of the educational system and the teacher's successfulness. In Physical Education, we are demonstrating a new method in our research to make differentiation. The students' lesson activity can determine the conditions how to form the certain groups. No students are those that adapt the tasks unified by everybody but after the group formation (based on measuring), the students perform the tasks correlated to the group abilities. Therefore, the load ability will be unified for everybody according to their capacity by doing the various exercises. The research showed the efficacy of the method as well as we can get an accurate picture about the same loading rate of the students' performance who can be loaded or less loaded by comparing two teaching units after performing the exercises controlled by measuring. The WHO (2010) offer a medium and high intensity physical activity for the individuals aged at 5-17 in minimum 60 minutes. The objective is to develop the skeletal, joint and musculoskeletal system as well as the cardiorespiratory endurance with aerobic exercises. This measuring method helps to test whether the medium or high intensity load, prescribed by the WHO, can be accomplished or cannot, measuring the effectiveness of the program. PE lesson plays a major role in this.

Keywords: *Differentiation, Measuring of Pulse Rate, Motivation*

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Introduction

The WHO (2010) offer a medium and high intensity physical activity for the individuals aged at 5-17 in minimum 60 minutes. The objective is to develop the skeletal, joint and musculoskeletal system as well as the cardiorespiratory endurance with aerobic exercises.

Numerous Hungarian and foreign researchers emphasize the significance and role of a healthy lifestyle especially in connection with sport and exercise for different target groups (Bendíková 2014, Dobay 2014, Bíró 2015, Bujdosó at all 2013, Dávid at all 2010, Herpainé 2014, Herpainé at all 2016, Herpainé 2007, Herpainé at all 2015, Madarász-Bácsné 2016, Molnár at all 2014, Olvasztóné at all 2007, Ráthonyi at all 2015, Simon 2004, Simon 2015/A, Simon 2015/B, Simon at all 2012, Simon-Kajtár, 2011).

Supported with previous studies we stated that being aware of the pulse zones had raison d'etre (Müller, Rácz, 2011, www.tka.hu).

In our research the load capacity of the students with different abilities was studied in the same conditions within a certain class taking the other factors influencing the load capacity into account.

They got instructions for their out-of-class sporting activities with specifying the proper pulse interval which could also be employed during their own training.

Two teaching units were chosen, volleyball and basketball. The teaching units were divided in three measurable parts.

The diagnostic evaluation lesson (1st lesson), the practicing lesson (building up soft coordination) and the summative evaluation lesson were the used phases. The educational lessons were divided into four parts where the measures were carried out: measuring pulse in the 1st minute, after the warming-up phase, the pulse after the main phase and the pulse measured 5 minutes after the main phase (resting pulse).

From these measures we could realize the thematic unit. Comparing the two teaching units, we could get a comprehensive picture about the students' load ability in the starting phase of the two ballgames (Figure 1.).

During the second teaching unit in the same thematic unit students worked in groups attending to data where the central factor was the load ability. Forming the three groups, the load ability was given by degrees therefore we could reach the same load for each student. The 80% intensity aimed at the beginning of the lesson was successful at every tested lesson so the measuring method can be said to be efficient at the basketball and volleyball lesson.

It can be planned in the next thematic unit how high the load should be generated so that the students can make out appropriate performance besides learning to move in a proper way.

Hypothesis

With the new method it can be possible to assess the students' deficiencies and their continuous development. With individual measurement within a given time period under a thematic unit for everybody.

This method demonstrates the ratio to the load of the thematic units.

To identify the efficiency of the thematic units can make the curriculum built from these units and the educational method as well as the methodological substantiation of the learning organization and the learning material processing easier.

Materials and Methods

16-year-old schoolboys were studied in the research at Újpest Bilingual Technological Technical and Grammar School in Budapest in 2016/17 school term. The pulse measuring took place on the neck area for 10 sec and multiplied by 6. After that feedback analysis was calculated from the data then some conclusions were drawn about the load, the proportion of the load and the educational -organizational methods. Finally differentiation was made based on the given data.

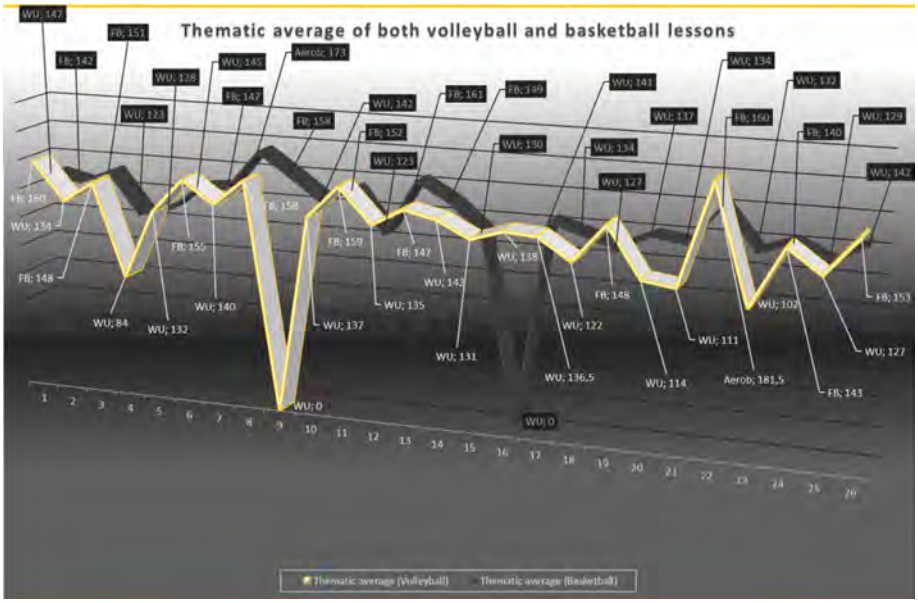

Fig. 1. Thematic average of both volleyball and basketball lessons

The average within the three lessons formed the thematic average which also gave a comprehensive picture about the class performance. The student's HR reserve-HRR % (the students' heart rate reserve percentage) - was counted from this. The HRR is the difference between the studied individuals' resting and maximum HR.

The HRmax is the highest pulse rate per minute (bpm) that a person can reach with his max performance. This value depends on the person, the age, the physical conditions and the fitness level.

The HRmax value can be used to determine the training intensity, usually given in percentage of the HRmax value (Figure 2.).

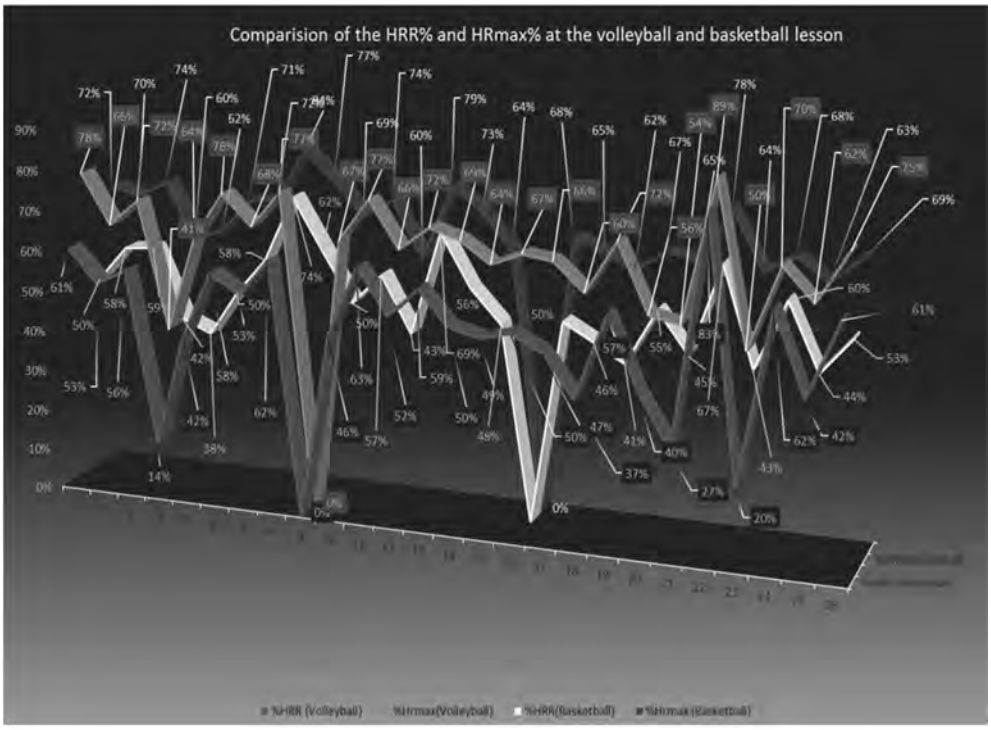

Fig. 2. Comparision of the HRR% and HRmax% at the volleyball and basketball lesson

Three groups were formed considering the activity and the resting HR (Table 1.).

Table 1. *Group work considering activity and resting HR*

Group work considering activity and resting HR		
1st group	2nd group	3rd group
Number 1	Number 4	Number 8
Number 2	Number 5	Number 9
Number 3	Number 6	Number 10

Results

Three devices were at our disposal so three students were measured per group and the others only manually.

A student was selected from each group and the working procedure of the system was demonstrated by him.

The 1st group (the least loaded students) was shown at the Figure 3. and Figure 4.

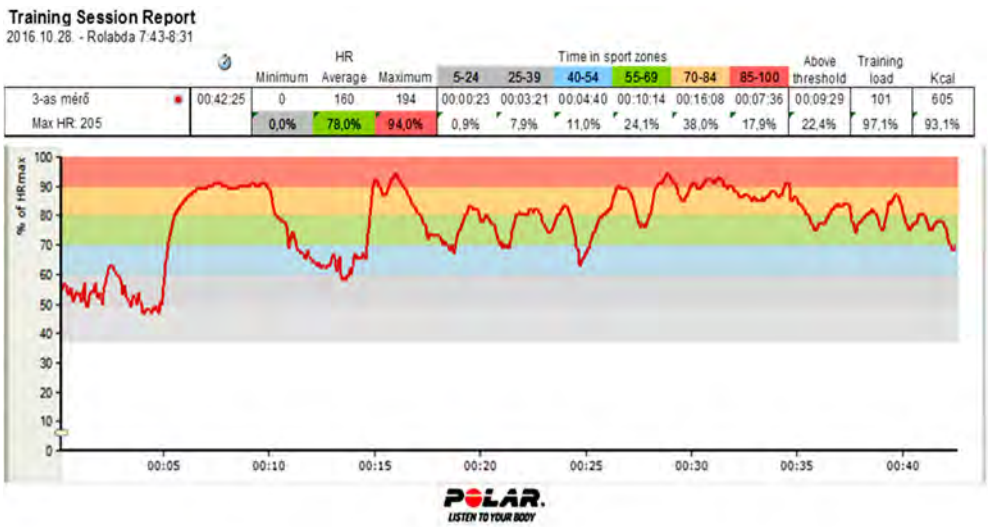

Fig. 3. Student's- belonged to the 1st group with measurement numbered 3- performance based on the HRR% during the volleyball second thematic unit

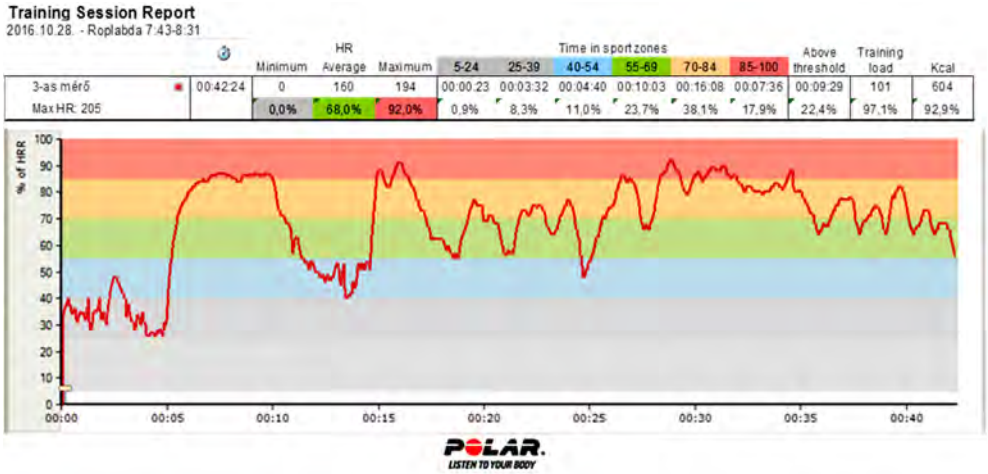

Fig. 4. Student's- belonged to the 1st group with measurement numbered 3- performance based on the HRmax% during the volleyball second thematic unit

We can allocate that above 85% zone of the student's maximum output the student spent 7:36 minutes and he/she provided 60-84% achievement in most of the lesson (26 min). In this group the load choice is very significant so that the intensity should not influence the task fulfilment.

The students belonged to the group numbered 2 are those who claim the higher load than the 1st group but less one than the 3rd group (Figure 5., Figure 6.).

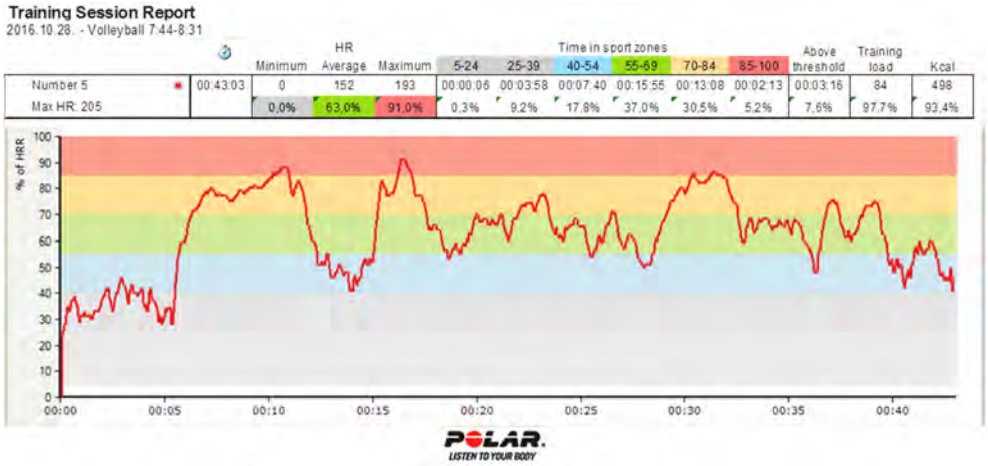

Fig. 5. Student's- belonged to the 2nd group with measurement numbered 5- performance based on the HRR% during the volleyball second thematic unit

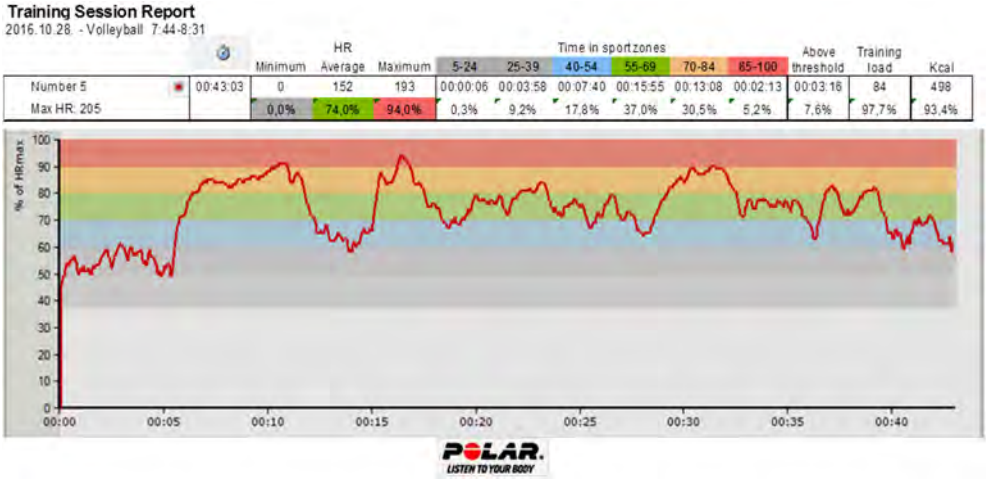

Fig. 6. Student's- belonged to the 2nd group with measurement numbered 5- performance based on the HRmax% during the volleyball second thematic unit

The 2nd group students spent 60-84% performance zone under the predetermined load in the majority of the lesson (29 minutes and 2 minutes above 85%). The time out included explanations, discipline and fall-in was only 10 minutes.

The 3rd group is one that can be loaded at the highest (Figure 7., Figure 8.).

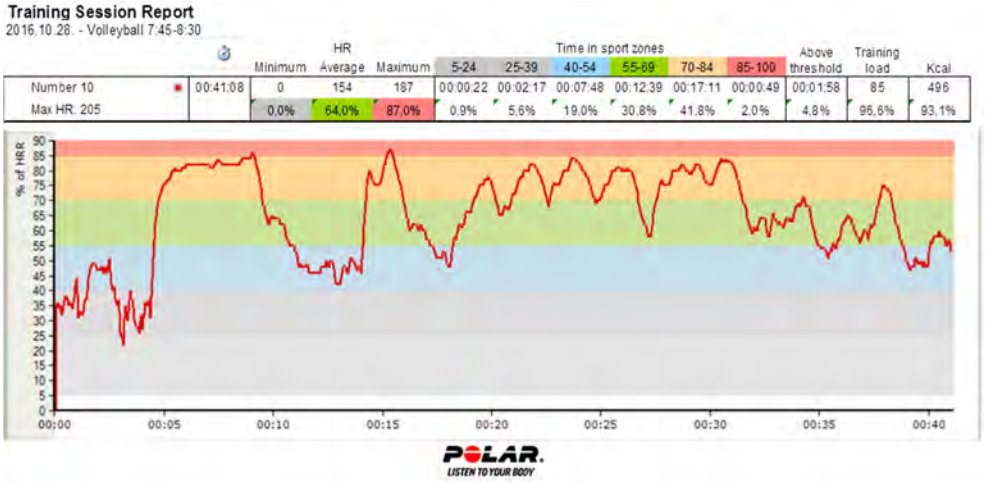

Fig. 7. Student's- belonged to the 3nd group with measurement numbered 10- performance based on the HRR% during the volleyball second thematic unit

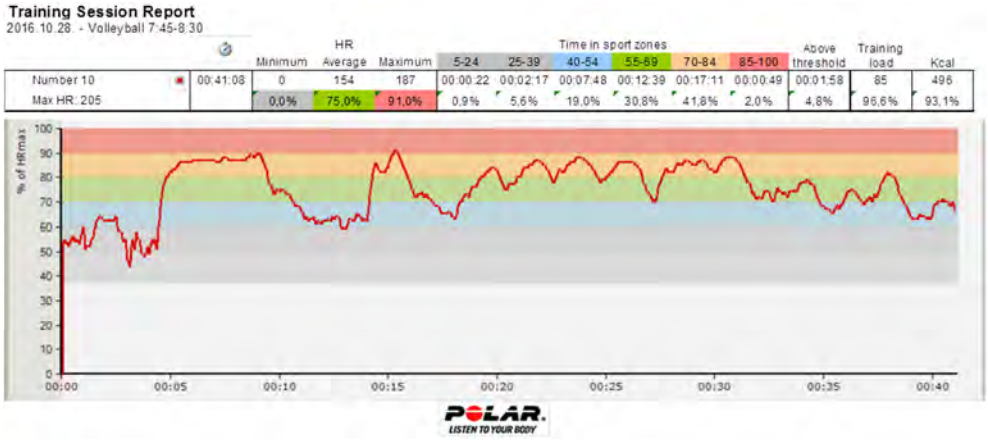

Fig. 8. Student's- belonged to the 3nd group with measurement numbered 10- performance based on the HRmax% during the volleyball second thematic unit

The students in the 3rd group spent fewer than 1 minute (most of them) in the zone above 85% and they spent more than 29 minutes in the 60-84% zone proportionally HRmax%.

We can allocate that the students in each group correlating to individuals got nearly the same load by different exercises.

Similar performance can be diagnosed during the basketball thematic unit.

In case of the first group the result shows similar values to the volleyball teaching unit after less intensity and carrying out easier exercises (Figure 9., Figure 10.).

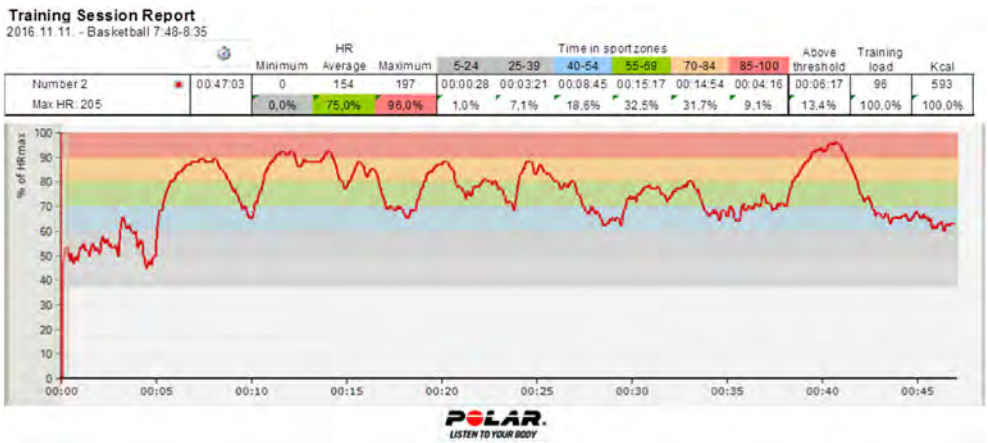

Fig. 9. Student's- belonged to the 1st group with measurement numbered 2- performance based on the HRmax% during the basketball second thematic unit

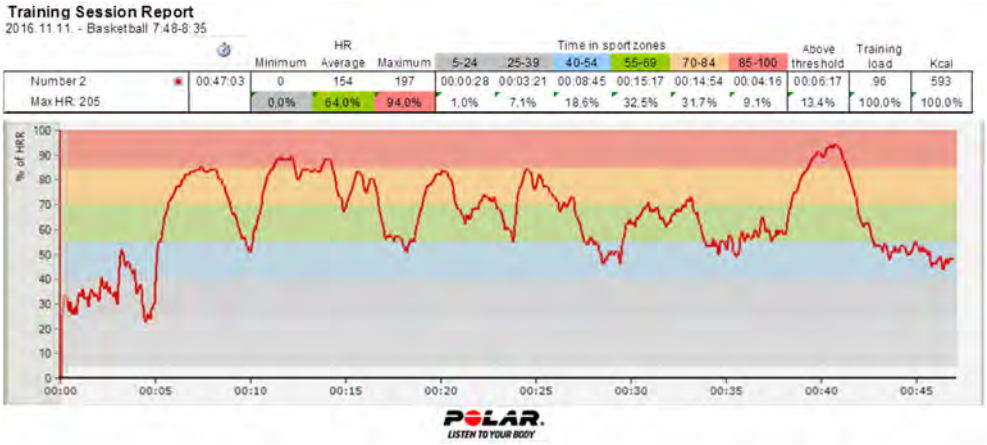

Fig. 10. Student's- belonged to the 1st group with measurement numbered 2- performance based on the HRR% during the basketball second thematic unit

The students spent 30 minutes in the 60-84% zone. The participated student correlating to his own maximum HR worked with 75% intensity and the highest HR at the lesson correlating to his/her normal healthy HR was 96% namely 197.

The output of the students belonged to the 2nd group verifies the efficiency of the method (Figure 11., Figure 12.).

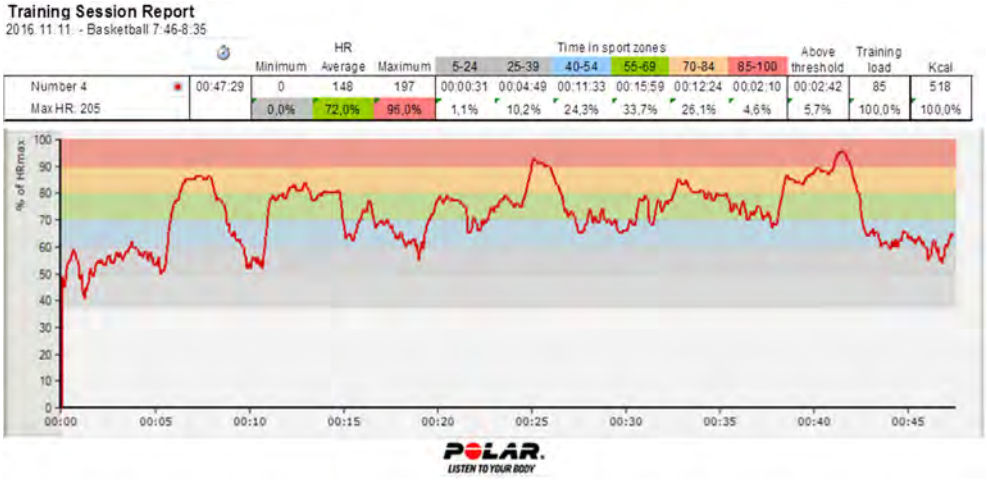

Fig. 11. Student's- belonged to the 2nd group with measurement numbered 4- performance based on the HRmax% during the basketball second thematic unit

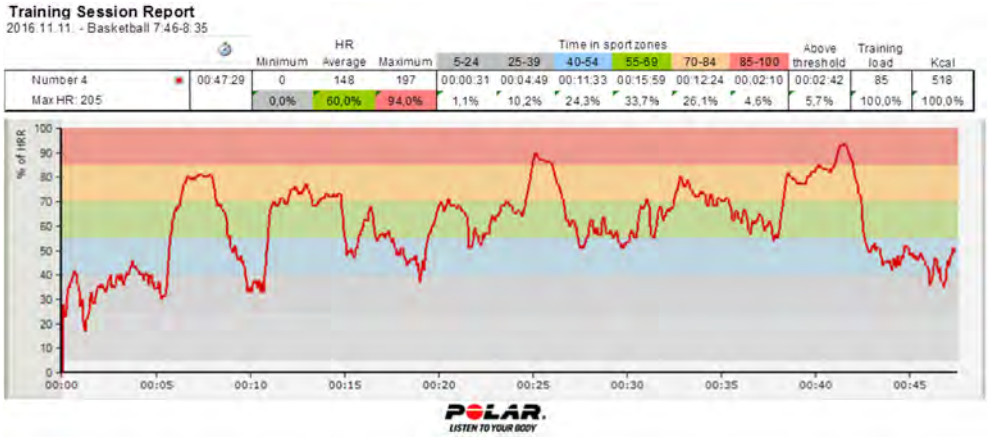

Fig. 12. Student's- belonged to the 2nd group with measurement numbered 4- performance based on the HRR% during the basketball second thematic unit

Most of the students in group 2- as seen the chosen student's diagram – spent the most time i.e. more than 28 minutes in the 60-84% zone and in the 85% zone almost 2 minutes.

The members of the 3rd group that could be loaded in the highest degree considering their age, sex and lesson type, the following results were obtained (Figure 13., Figure 14.).

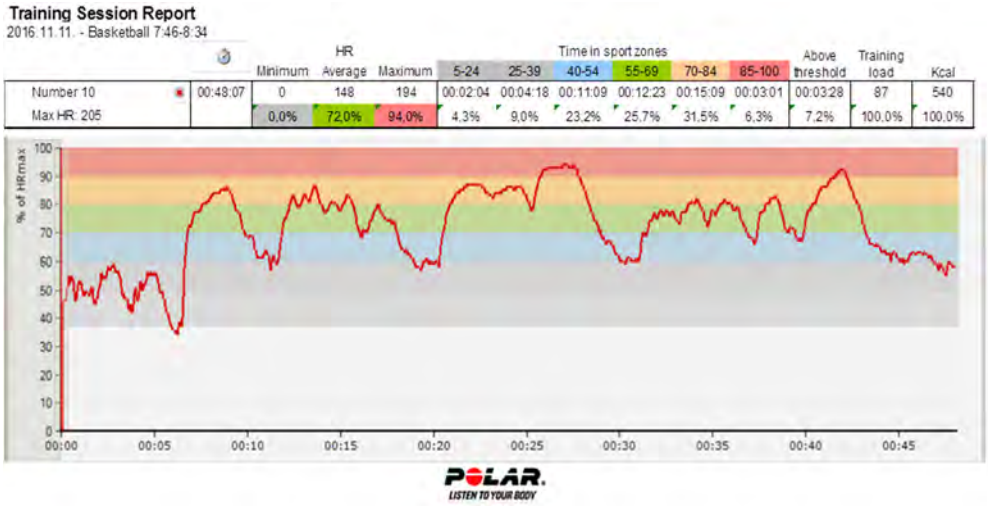

Fig. 13. Student's- belonged to the 3rd group with measurement numbered 10- performance based on the HRmax% during the basketball second thematic unit

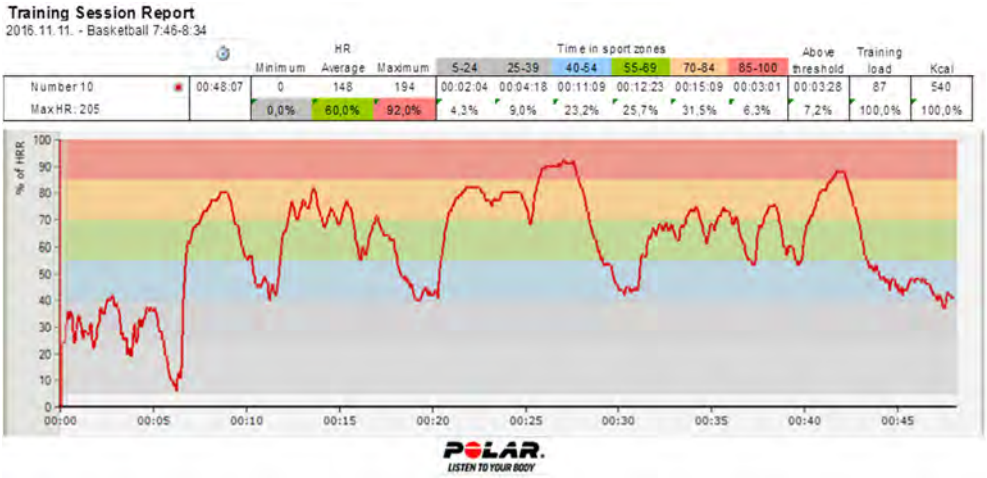

Fig. 14. Student's- belonged to the 3rd group with measurement numbered 10- performance based on the HRR% during the basketball second thematic unit

Students in group 3 and the student with measurement 10 worked 27 minutes in the 60-84% zone and 3 minutes in the zone above 85%.

The objective measurement of the three groups makes possible to ascertain and adopt adequate load ability for the teacher. It can be practiced in every teaching unit (except gymnastics). It requires continuous checking and interoperability between the groups. Increasing the students' interest and visualizing the developmental diagram are rudimentary to the efficient work. In addition to the measurement of the students' work, it can serve as the measurement of the teacher's preparation, professional knowledge as well as the support of the evaluation. This method can play a major role to predict and prevent the students' diseases.

Conclusions

This method can contribute to evolve a new objective measuring method that can change the subjective evaluating system of the teaching units and the incompetent people's conviction according to which PE has to be evaluated in a subjective way. PE can be measured and can be made measurable.

The usage of this system can make possible to eventuate a crucial change in the approach in the field of this profession, too where the foundation of the judgment will not depend on the short-term humanity but the development achieved with long-term and hard work.

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