

THE DOCTORAL THESIS ABSTRACT BY Ms. ENE M. DANIELA

THESIS SUBMITTED TO: NATIONAL UNIVERSITY OF PHYSICAL EDUCATION AND SPORT, Bucharest, Romania, 2010

THESIS ADVISOR: Ph. D. Professor Marinescu Gheorghe

THESIS TITLE: ANKYLOSING SPONDYLITIS TO SPORTSMEN AND TO UNSPORTSMEN - FUNCTIONAL ASSESSMENT AND RECOVERY USING PHYSICAL TRAINING MEANS

KEY WORDS: ankylosing spondylitis, assessment, recovery

The work proposed it's self to be a comparative study between two groups of subjects (the first one contains former athletes who have ankylosing spondylitis and the second one contains unsportsmanlike which shows also ankylosing spondylitis) and to see how disease progresses to the two groups.

Also, as novelty and originality, the work proposes new means of assessment and recovery, means which belongs to physical education and sport domains.

The research was made in the recovery basis of the "St. Maria" Clinical Hospital, between 2005 and 2007.

The study included subjects having five-ten years of evolution in the diseases historical (from making diagnosis), 17 each group, as homogeneous as possible.

The work is divided in three parts.

- First part includes: introduction elements, the title explanation, justification for choice of theme, the novelty and originality elements and the theme representation in the literature.
- Second part, represents the pilot study, and its goal is to prepare main research, to prevent the eventual difficulties, to test the methods and to anticipate the result. Pilot study hypothesis is the statistical hypothesis (or null), and is opposite to the research hypothesis: it expects that between two groups are no significant differences and, also, after recovering program there are no significant differences between first evaluation and the final one. In the pilot research we used only few parameters and few methods of

work as we check hypothesis truthfulness. The methods used in pilot study were:

- methods for work:
 - scientific documentation method
 - the guided observation method
 - the mathematical method
 - the conversation method
 - the experimental method
 - graphic representation
 - data analysis and interpretation
- statistical analysis methods:
 - arithmetic average
 - standard deviation
- the statistical test's methods:
 - Pierson's correlation coefficient
 - Mann-Whitney's test
 - The comparative graphic representation

The main mean is the physical exercise – the factor that improves functionality, the functional unit of physical education and sport.

Statistical processing in pilot experiment has as a goal to check the statistical hypothesis in order to design the research.

The null hypothesis was infirmed, so there are significant differences between two groups of subjects, and also between the two evaluations. This result recommends further research, the proper experiment.

■ Third part is the research by experiment.

It has: goals, objectives, tasks, hypothesis, subjects, methods and means, processing data.

The goal is to highlight the differences appeared after exercises program application, (an original program, we propose), to the sportsmen subjects and to the unsportsmanlike, and to use new means for measurement and assessment, physical education and sport specific.

The objectives are:

- the ankylosing spondylitis recovery by physical education and sport means;
- the ankylosing spondylitis assessment by physical education and sport means;
- the analysis, process and interpretation of results obtained after exercise application and highlight the progresses registered by effort capacity parameters.

The tasks of the study were:

- consulting the specialized materials;
- making groups of subjects as homogenous as possible for obtaining relevant and valuable results;
- setting illness incidence between sportsmen;
- conceiving the assessment sheet;
- conceiving an exercise program;
- inclusion in effort program of the various tests, with many effort parameters;
- using the data and the information from the pilot experiment;
- applying test for two years;
- collection, processing and interpretation results.

The research hypothesis:

- 1) The mean of the physical education and sport determine changes in the clinical evolution and motor behavior of the investigated subjects, sportsmen and unsportsmanlike and allowed evaluates the effort capacity by effort parameters;
- 2) After exercise program application to the two groups, the results registered to the former athletes with ankylosing spondylitis are higher compared with the sick without practicing sport.

The former athletes group includes subjects obligated to quit sport after making diagnostic. To the most, disease installed after their 22 years old.

The incidence of the illness between former athletes on sport disciplines is: football (6), rugby (4), gymnastics (3), athletics (2), Handball (1), fight (1).

The methods used in research were:

- methods for work:
 - scientific documentation method;
 - the guided observation method;
 - the mathematical method;
 - the conversation method;
 - the experimental method
 - graphic representation;
 - data analysis and interpretation;
- statistical analysis methods:
 - arithmetic average;
 - standard deviation;
 - median;
 - trust interval;
 - the effect size index
- the statistical test's methods:
 - Pierson's correlation coefficient

- Mann-Whitney's test ;
- The Anderson-Darling test;
- The Wilcoxon test;
- The Boxplot;

After processing data the result confirmed the both hypothesis: there are significant differences between two groups of subjects, and also between the two evaluations.

So, the conclusions were theoretical and practical.

Theoretical conclusions:

- 1) Ankylosing spondylitis is an inflammatory disease who affects the young adult, located to the beginning of the professional life, which determines strong implication, social and economics.
- 2) The advantages offered by using the physical education means:
 - the adaptation of exercise program to the machineries from the gym increase the accessibility, attractiveness , the possibility to monitor and to evaluate its self;
 - the adaptation and the individualization easier of the program by using effort parameters (time, volume, intensity, complexity)
 - increase the interest level and the motivation in work with more and more sophisticate equipment, which allowed a high degree of comfort while working (air ventilation, cardio monitor, automatic tilt, security systems, audio-video systems) which transform the exercise in a pleasant and attractive activity;
- 3) The early possibilities of making diagnostic and the interdisciplinary team work changed significant the disease prognosis in the latest years. So, if in the '80-'90 making diagnostic supposed to see the bones deformations, today the diagnostic is made much before bones deformation and other deficits secondary disease.
- 4) The theme is a novelty and original element, both in national and international. We respond the specialist's needs and it will show the practical utility.

Practical conclusions:

The processing statistical data's wants to demonstrate what we find along our experience and we formulate as o research hypothesis, namely that, after applying the exercise program that we proposed, appear significant differences to the both groups of subjects and the functional

assessment made by effort parameters offers more complete and realistic data concerning the subjects state.

The selected parameters targeted to describe more accurately the effort capacity, the items easy to train, to measure and to quantify. The parameters were: the time of training, the time on the treadmill, the time on the bicycle, the distance on the treadmill, the distance on the bicycle, the energy consumed on the treadmill, the energy consumed on the bicycle, the weighs, number of repetitions, rates.

Calculation arithmetic averages, comparing, the percentage and the graphical expression indicates significant increases between the two evaluations (between 25,08% and 453,85% to the unsportsmanlike; between 22,61% and 825% to the former athletes). According with these results, the null hypothesis is disproven and the first research hypothesis is confirmed (after applying the exercise program, appear significant differences to the both groups).

The Pearson's correlation shows correlations between the two evaluations, to the both groups. The r value is positive and in majority over the critical level (r critic). According with these results, the null hypothesis is disproven and the first research hypothesis is confirmed.

The size effect index fits between 1,12 and 3,78 to unsportsmanlike and 0,93 and 3,81 to the former athletes. That means a big effect to a very big effect for 8 parameters, medium effect to big effect for 3 parameters.

The Mann-Whitney's test for independent groups shows differences statistically significant between the two groups of subjects, which confirms the second hypothesis of research.

Proposals

The hypothesis demonstration makes obvious the utility and the necessity of the clinical picture enrichment.

That's why we want to recommend the extension of the patient's sheet (used in specialized clinics) with a new paragraph dedicate to the functional diagnostic, evaluate by the effort parameters and by the general capacity of effort.

Also, the differences appeared between the former athletes and the unsportsmanlike becomes, once again, an argument in sport promotion, and it represent a starting point for the new researches concerning treatments, recovering programs and, especially, prophylaxis.