

FUNCTIONAL EVALUATION AS A NEW CURRICULUM CONCEPT AT HEALTH SCIENCES SCHOOLS

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Abstract

A gradual ageing of population will be one of the most important social challenge in future Europe and future world. According to Eurostat, the share of people aged 65 or over will account for 28.7% of the European Union -28's population by 2080 and people aged 80 or above can double until 2080 to 12.3%. Simultaneously studies show that a 20-year-old worker has a 3-in-10 chance of becoming disabled before reaching retirement age. This results from various factors, becoming a peculiar symbol of the changing civilization, that determine unhealthy lifestyle, habits or behavior like overeating, no or less physical activity, stress, smoking, alcohol consuming etc.

The consequences are addressed to both (a) people who suffer from health problems such as joint and skeletal problems, cardio-vascular diseases, hypertension, overweight, depression and so on, and (b) economy by increased social and healthcare expenditure. Functional evaluation (FE) is one of domain of medicine which creates a new frame for diagnostic and treatment procedures considering the relationships of health and lifestyle meaning integration of physical impairments with mental health and social integration. This approach to health services assumes benefit of receiving more accurate diagnosis and improved treatments. Health assistance will be more focused in what patients do and how they do it improving their quality of life giving tools for protection against future functional disability.

Taking this into considerations as a background of the research, the aim of this paper is to present a spectrum of FE approaches in today diagnosis and treatment procedures as well as to report recognition of knowledge about FE included in education programs of medical schools in Europe.

The methodology was based on focus group sessions organized in three countries: Spain, Germany and Poland as well as on the international survey. The outcomes were the input for developing new curriculum concept for health sciences schools about FE as a comprehensive approach to build health societies in the future.

Keywords: functional evaluation, curriculum, health sciences school.

1 INTRODUCTION

In recent years, knowledge and technological innovation reached in the field of health sciences have grown considerably. One relevant example is the Functional Evaluation (FE). FE is a clinical discipline that emerges and develops in physical medicine and rehabilitation field. FE could be defined as any systematic attempt to measure objectively the level of person's capabilities to develop their function in a wide activities spectre. FE collects the required technologies and methods to assess how people perform daily life activities, focusing on: musculoskeletal system, neurological and cognitive system and social environment. This approach is aligned with The International Classification of Functioning, Disability and Health (ICF), which is the WHO model for measuring health and disability at individual and population levels.

Further models for determining function include the WHO health strategies and initiatives like the World Report on Disability (2011), Global Disability Action Plan (2014), Rehabilitation 2030 – a call for action (2017), Recommendations Rehabilitation in Health Systems (2017), WHO Assistive Products List (2018), or the UN Convention of the Rights of People with Disabilities (2006).

European continent must face important social-health care challenges along 21st century as gradual aging and significant increasing of long-standing limitations due to health problems according to Eurostat and European Health Interview Survey data. Consequences are addressed to people quality of life and health resources management. Hence, an increase healthy life is one of the main goal for EU health policy that must be focused on providing training in medical universities completed by new skills suitable to face the needs related to Europeans' health in next years. Furthermore, it is necessary to find out solutions to improve social-health system efficiency to properly manage the resources from a preventive and nonreactive perspective. New efforts have been developed, for example, the International Consortium for Health Outcomes Measurement (ICHOM) objective is to define outcomes measures that matter to the health care success aimed to provide the most relevant medical conditions and by driving adoption and reporting of these measures worldwide.

Until recent dates and currently, FE has been carried out by health professionals using traditional tools such as functional scales. Scientific and technical advances achieved in Functional Evaluation field related to biomechanical assessment have become a revolution in the way practitioners identify, treat and assess impairments with highest impact on quality of life. Biomechanical methodologies can provide objective, valid and accurate data related to functional status of the patient; help professionals to decision making in the health field. For example, Hospital Frankford of Philadelphia, reference for clinical research, is pioneer in application of technological methodologies based on biomechanical assessment in the assistance procedures of the main musculoskeletal pathologies.

FE is considered a suitable way to face current and future European socio-health challenges because is able, among others, to support the medical diagnosis, to monitor the effectiveness of treatments, to segment and evaluate patients with accurate and objective information related to functional status. These features can contribute to the improvement of health system efficiency in order to properly resource management and will help to face the expected challenges in an integral and synergistic way.

2 HOLISTIC APPROACH TO THE FUNCTIONAL EVALUATION – TEACH PROJECT

The problem of today approach to diagnose and treatment of physical impairments is focusing particularly on musculoskeletal system (physical health) and lack of including in evaluation model an integration approach taking into account also neurological, cognitive system (mental health) and social environment (social integration). According to research such an approach is confirmed as equally important [1].

There are several known approaches and procedures of functional evaluation proposed by medical researchers, like the Blankenship, Ergos Work Simulator and Ergo-Kit variation, the Isernhagen Work System, Hanoun Medical, Physical Work Performance Evaluation (Ergoscience), WEST-EPIC, Key, Ergos, ARCON, and AssessAbility. However they are addressed to evaluate people's functionality after injuries or long-lasting low back pain in order to assess their ability to return to work or possible treatment and rehabilitation paths and are related to various measures of disability. The proposed new approach in TEACH project is prediction and prevention of human functional limitations and improvement of treatment by more accurate diagnosis and individually developed treatment path, not only reaction when the health problem is already advanced.

The project results contribute to health promotion policy of EU countries due to the creation of new knowledge of how age, disability onset/duration, and type of limitation influence health and quality of life across adulthood. According to recent research this could identify when and for whom health promotion services are most critical, support optimization of health and quality of life and support reduction of the risk of disability ([2], [3]).

The contents related to the Functional Evaluation developed in TEACH project will have a broader approach than in previous projects. For example, it extends the utility of biomechanical methodologies in functional evaluation to mental health field. Latest studies report close relationship between musculoskeletal alterations related to function impairment occurred in population affected of mental disorders that make them fragile. This project is also innovative in the way that the contents will be aimed to teachers of health sciences schools responsible of curricula definition. The goal of the project is to enrich the skills of new graduates by means the knowledge of the newer techniques, methodologies and wider approach developed in the field of Functional Evaluation. The long term

objective of this project is to help the future professionals in health sciences to face the social and health care challenges of the European continent in the next years.

3 MATERIAL AND METHODS

Two kinds of methods were used in order to detect educational needs of students and future medics in the area of FE. First method was focus group sessions. The sessions were conducted with medical and academic professionals in teaching area of traumatology and orthopedic surgery, pathology of the locomotor system, general anatomy, physiotherapy and rehabilitation.

The survey (second method) was performed particularly to gather information concerning the training needs in biomechanics and instrumented analysis of professionals involved in teaching at health sciences universities, by means of a questionnaire diffused in all European countries. The questionnaire was distributed by two ways and formats: with the use of web survey via Internet channel and by traditional paper version distributed in universities within all European countries. The Association of Medical Schools in Europe was the main organization for sharing information about the research objective and questionnaires because of its wide professional network around medical universities in Europe.

4 RESULTS

Differences of country different scope and understandable of FE was presented by focus group experts. In Spain and Germany, FE is identified rather with such areas as methods and tools for motor and biomechanical evaluation of human capabilities including testing of postural stability, biomechanical gait analysis, human motility, functional anatomy, functional physiotherapy. Here the up-to-date biomechanical technologies are especially important. According to Polish experts biomechanics is a subject of physiotherapist and rehabilitation domain of medical schools and first of all schools of physical education. The expert accentuated that biomechanics is one of the basic teaching subjects within the fields of education in physical education academies and is of a high standard. Universities of this type have substantial and technical facilities adequate for teaching in this area. However, experience indicates that this area should be constantly developed in the context of global trends.

However, during the discussion, attention was paid to the need to diversify the concepts of functional evaluation and holistic approach to the patient. There are many uncertainties in the meaning of the concept of functional assessment in the environment of various academic groups. It is influenced by the understanding of the word "functional", which refers to the physical implementation of actions by the human body. In this sense, there is no place for psychosocial aspects that have a place in the holistic approach.

More often encountered concept in medical schools is functional diagnosis - this is topic connected to physiotherapy and rehabilitation. The training contents can be directed to these domains.

Regarding questionnaire a total of 104 responses were gathered from 12 different countries, mainly located in Europe (see Figure No. 1). The vast majority of the respondents were women: 55,86% of the professionals, regarding the age of survey participants, most of the respondents were aged between 25 and 35 years (27,10% of the sample) and 46 and 55 years (28,04%), but there was also a high percentage of aged, expert professionals.

In the article the most important outcomes from this survey were presented which were necessary to recognize preferences for teaching FE.

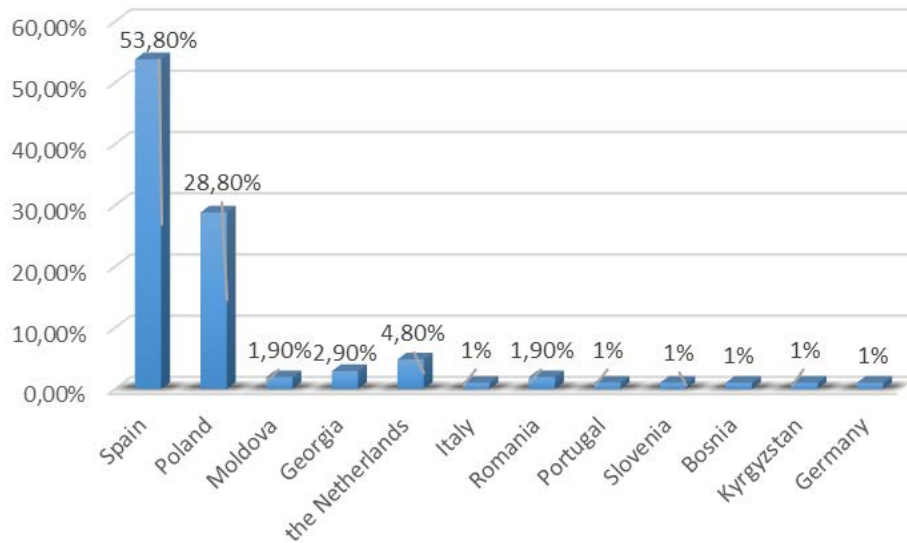


Figure 1. The distribution of respondents by country.

The respondents provided information about the technical capabilities in the area of biomechanical instrumented assessment. More than 40% of them do not use the biomechanical instruments in their practice what is documented in the chart on the Figure No. 2.

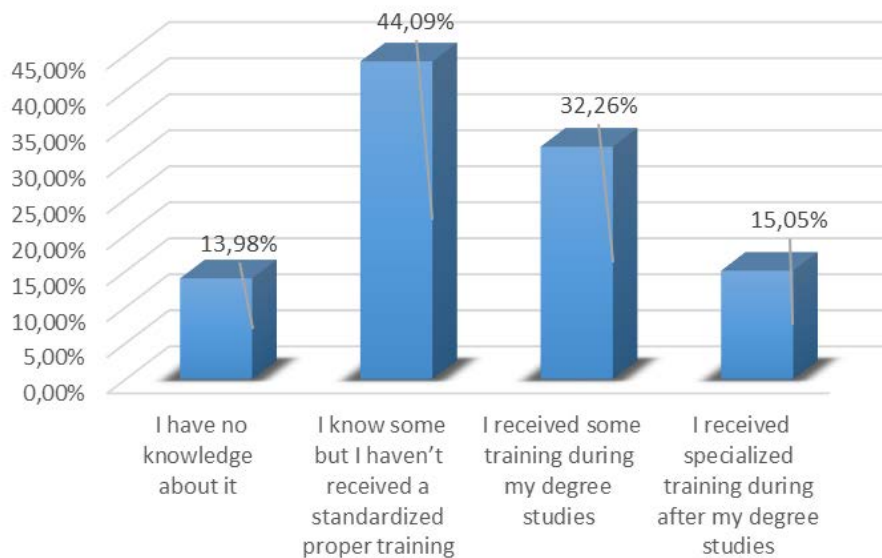


Figure 2. Biomechanical laboratory in health sciences schools.

One of the crucial aspect of the research was to obtain information about today knowledge in biomechanics and functional evaluation.

Regarding knowledge in biomechanics, respondents answered (see Figure 9):

- 13,98% have no knowledge about it,
- 44,09% have not received any formal training,
- 47, 31% received some or specialized training in biomechanics.

The worse outcomes were obtained for question about knowledge of instrumented assessment. Here more than 70% of respondents declared that they have no knowledge (see Figure No. 3).

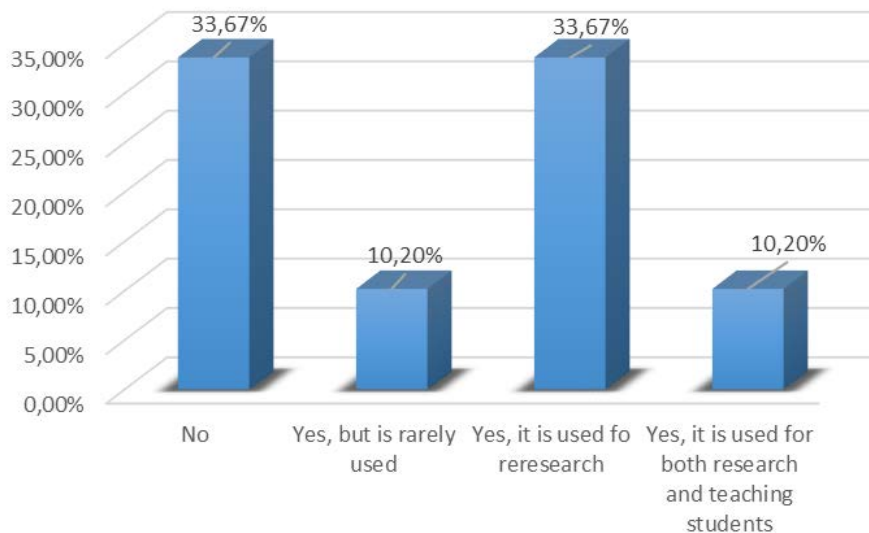


Figure 3 Knowledge about instrumented assessment.

Clearly, the knowledge in biomechanics is greater than that of Instrument Assessment.

The modality of no formal training most frequently are:

- I have not received any of these trainings (38,04%).
- Internet resources (26,09%).
- Specialized books or journals (26,09%).

What is also important that FE, that is one of the crucial element of human rehabilitation, is not known by almost a half of respondents.

Only 11,46% of respondents, considered that to count standardized official training in human biomechanics and instrumented assessment is not important. The remaining 88,54% consider that YES.

The reality is that very few contents on these topics are being taught both in biomechanics and instrumented assessment (42,55%), and in Teaching of functional evaluation concepts (46,24%).

Based on the survey the fundamental topics creating new curriculum were developed.

The most important contents are (from most to least important):

- General aspects of human biomechanics (including definitions of physical concepts like forces and accelerations) (2,25 of average).
- Integration of physical health, cognitive (mental) health and social integration in diagnosis and treatment of musculoskeletal impairments (2,19 of average).
- Basic concepts on instrumented techniques for functional assessment and interpretation of data provided by each (2,18 of average).

In the Figure No. 4 the basic concept of new curricula was formulated according to respondents opinions.

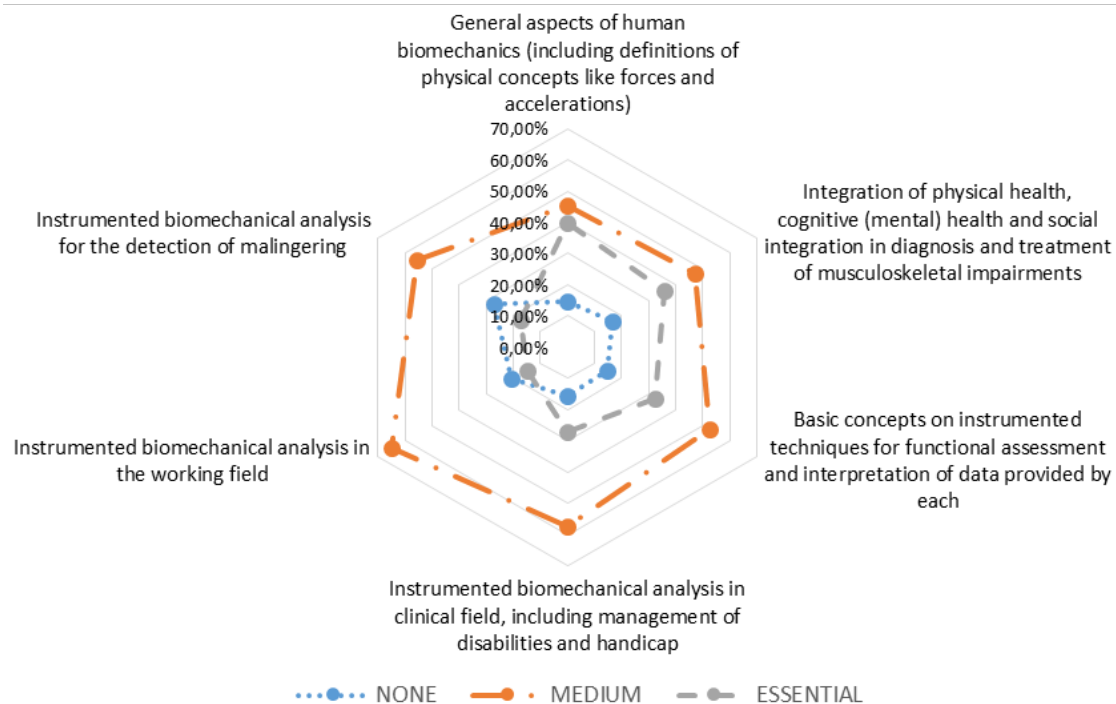


Fig. 4. Preferences regarding new curricula for medical school.

5 CONCLUSIONS

In recent years the knowledge and technological innovation reached in the field of health sciences have grown considerably. The scientific and technical advances achieved in the field of FE have become a revolution in the way practitioners identify, treat and assess many of the syndromes and pathologies with highest impact on quality of life. FE scope goes beyond physical dimension, and it takes into account perceptions, needs and preferences. Particularly, FE collects the required technologies and methods to assess how people perform daily life activities, focusing on: - musculoskeletal system (physical health), -neurological and cognitive system (mental health), -social environment (social integration).

According to the research main conclusions can be formulated:

- The topic of FE is not obvious regarding understanding. Each medical domain interprets this concept in different way. That is why it is strongly recommended to define FE clearly in the certain context.
- These ambiguities are also connected with biomechanics. This topic is e.g. known and it is a matter of education in dentistry domain. However in this domain FE is not known. FE is rather connected with health prevention and education.
- Normally biomechanics is a subject of physiotherapist and rehabilitation domain of medical schools and first of all schools of physical education. The curricula are mostly connected with such topics like: testing of forces and speed capabilities; testing of postural stability; biomechanical gait analysis, human motility, functional anatomy, holistic rehabilitation, functional physiotherapy.
- There is known concept functional diagnosis - this is topic connected to physiotherapy and rehabilitation. The training contents can be directed to this domains.
- There are no formal trainings regarding instrumental biomechanics and especially FE.
- Regarding medicine normally if we think about FE as a holistic approach to diagnosis and treatment, we should remember that any additional interview or test with patient means more time for visit. Taking into account that usually statistical patient has 15 minutes per visit it will be very problematic to implement FE approach. It is recommended to create a procedure explaining for who, when, under what kind of conditions doctors could use FE approach.

- In order to identify specific needs in terms of education related to the topic of biomechanics and functional evaluation recommends research questionnaire among a single group of respondents. Respondents should be characterized, among others similar professional experience. It is recommended to test:
 - final-year students from various medical faculties and about the medical (eg. The Faculty of Medicine, rehabilitation, physical education academies)
 - doctors and physiotherapists with low professional experience (eg. under 3 years). There is a presumption that a person entering the career path will be able to identify the lack of knowledge and identify gaps in the curricula.

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