OBSERVATIONAL STUDY REGARDING THE MUSCULAR-ARTICULAR DEMANDS TO WHICH THE PHYSICAL THERAPISTS ARE SUBJECTED

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Introduction to the research topic

"Physical Therapy represents the educational - therapeutic - rehabilitative process that aims to improve (optimize) the mental and physical state of health for the social and professional integration or reintegration of persons in special situations (who never had, or have lost their psycho-motor skills as a result of various disorders or traumas)" (Moţet, D. and Mârza, D., 1995).

It belongs to a larger field of study, kinesiology, which is defined as "a biological interdisciplinary science that deals exclusively with the study of the human movement, the anatomical-functional elements responsible for it, and the ways to correct and/or compensate the reversible, partially reversible, or irreversible disorders" (Cordun, M., 1999).

"The profession of Physical Therapist is recognized and regulated in all parts of this country and in the European Union, having a clinical and educational specificity that activates within a social, economic, and political context" (extract from the law regarding the practice of Physical Therapy, the creation, organization, and function of the Romanian Order of Physical Therapists).

This profession was introduced in the Romanian Occupation Code by the Ministry of Labor and Social Protection in December 1997.

Once defined as profession, its practitioner must have several well-defined and clear skills and competences.

The attributions are structured in an activities referential, as follows:

1. "**Specific Physical Therapy activities**: **the assessment of the patient** by identifying and recognizing the physiological and psychological modifications, performing an anamnesis, establishing a correct differential diagnosis and a correct therapeutic program (based on the information); **the therapeutic program** by taking certain decisions for the physical therapy intervention, according to the established goals, environmental factors, and means specific to every disorder, using clinical thinking, and methods to solve the problem based on the patient examination, assessing and prioritizing the physical therapy goals, applying the treatment for musculoskeletal, neuromuscular, cardiopulmonary, internal, and tegumentary disorders; **the therapeutic practices**, such as manual therapies, massage, mobilizations, methods of neuro-motor re-education, individual or group exercises, cardiopulmonary and functional training, postures, hydrotherapy, physical agents.
2. **activities in the field of public health:** physical therapy is integrated in the health and social policies of promoting health, prevention, health education.
3. **activities of assessment and research**: clinical thinking approach for justifying the professional practices, assessment at the end of the treatment, aiming to verify the effectiveness of the means that were used, the judicious use of information and specific methods, elaboration or participation in the development of physical therapy research projects.
4. **generic activities:** verbal, nonverbal, and written communication, application of pedagogical principles, use of information technology, data and information management, data analysis, judicious use of information regarding ethics and legislation, support the

training of future professionals.

5. **activities of personal and professional development**: the control of one's insecurities, reactions to change and stress, time and work volume management, team work, partnership and reconciliation, being aware of the fact that one needs continuous individual training, the elaboration and practice of a life-long personal development and training plan, recognizing the importance of professional development" (http://cadredidactice.ub.ro/manolelacramioara/files/2011/05/pentru-poster-conferinta-bacau.pdf).

Through these competences, the physical therapists prove their professional training and knowledge, their method of approaching the problems, their ability to manage the priorities in a treatment session, taking the best decisions for the patient, and reaching their goals.

According to the website http://cadredidactice.ub.ro/manolelacramioara/files/2011/05/pentru-poster-conferinta-bacau.pdf, the competences are structured as follows:

- "**cognitive, envisaging the use of theory and concepts**: knowing and understanding the human movement concepts; examining, listening, observing, measuring, and assessing the patient's state and movements; establishing the physical therapy diagnosis and prognosis; following the physical therapy program through clinical reasoning, decision-making, and finally, problem solving;
- **generic**: using all the means of communication; acting within the public health system framework, for promotion of health, prevention, and health education; structuring a personal training plan; participating in health education; participating in physical therapy research programs;
- **meta-cognitive:** assuming your responsibilities and personal initiatives when exerting your profession; performing a critical endeavor, assessing the arguments, assertions, and concepts used in the practice of physical therapy; creating a personal professional training program;
- **sociological:** knowing how physical therapy is framed within the health policy and economy; identifying the factors that have a negative influence on the health; having a communication strategy for interacting with other physical therapists, but also other public health professionals; promoting the development of the profession;
- **praxeological:** applying the scientific and clinical knowledge during the physical therapy interventions; respecting the patients' health problems, their environment, and the professional ethics; assessing the results from the physical therapy intervention."

Also according to the official website http://www.rncis.ro/portal/ there are 2 more types of competences::

1. "**Professional**, through which the physical therapist can:
   - perform the modular projection (Physical Therapy and Special Motor Skills; Sport and Motor Performance; Physical and Sportive Education), and planning the basic contents of the field with an interdisciplinary orientation;
   - organize the curriculum, and the instruction and learning environment, with an interdisciplinary focus (Physical Therapy and Special Motor Skills; Sport and Motor Performance; Physical and Sportive Education);
   - perform the primary (functional) clinical assessment, and diagnosing the physical therapy intervention needs;
   - perform physical therapy prophylactic, curative, or rehabilitative programs;
   - use physical therapy intervention methods and techniques;
   - use management and marketing elements that are specific to this field.
2. **Transversal** - the therapist can:
   - organize physical therapy programs with qualified assistance, respecting the ethical and professional deontology rules;

- ensure that the work tasks are performed efficiently and effectively, for a good organization and development of the specific physical therapy intervention activities;
- perform an objective self-assessment regarding the need for professional training, aiming to adapt to the market demands, in compliance with his/her own personal development project.

All these competences emphasize the complexity of this profession through the fact that the physical therapists are involved, in their practice, in various processes, such as: professional development; interdisciplinarity between several fields, to structure various specific rehabilitation methodologies; conducting scientific studies; being involved in the promotion of physical therapy, performing several activities to highlight the complexity of this profession.

Research problems, objectives, settings, design and methods

In proceeding with this study, we started from the following hypotheses:

1. presumably, the practice of physical therapy can lead to the appearance of myo-artho-kinetic disorders in the therapists;
2. presumably, by identifying the disorders, we can contribute to the correction of bad postures during the application of the methods and techniques in the treatment session.

The subjects of this research were 16 physical therapists, 12 females, and 4 males, all from the city of Bacau. One fact must be emphasized - the selection of subjects was done in compliance with their schedule and accord.

The research was conducted in various Bacau physical therapy offices, rehabilitation centers, and state institutions.

The aim was to identify whether there is or not a stress on muscular-ligament system in the Bacau physical therapy practitioners.

The next table presents the subjects of this research:

Table no. 1 **The group of subjects**

No	Name	Gender	Professional Experience (years)	Work place
1.	**A. E**	F	10	FSC
2.	**C. H**	F	13	GHIOCELUL
3.	**C. R**	F	3	BETANIA
4.	**L..I**	F	3	BETANIA
5.	**G. R**	M	7	PISTRUIATUL
6.	**G. A**	F	4	BACAU COUNTY HOSPITAL
7.	**R. B**	M	8	BACAU COUNTY HOSPITAL
8	**L. S**	F	7	BACAU COUNTY HOSPITAL
9.	**A. M**	F	10	PRIVATE PRACTICE
10.	**R. L**	M	12	PRIVATE PRACTICE
11.	**P. D**	F	10	PRIVATE PRACTICE
12.	**R. M**	F	6	PRIVATE PRACTICE
13.	**B. M**	F	3	PRIVATE PRACTICE
14.	**D. C**	F	3	PRIVATE PRACTICE
15.	**B.A.**	F	5	PRIVATE PRACTICE
16.	**C.V.**	M	8	PRIVATE PRACTICE

The inquiry, as a research method, plays a very important role in getting the necessary information to study the subjects.

After talking with the specialists with regards to their participation in this study, and their agreement to participate, we used an open-question questionnaire to collect the data necessary for our research.

The research methods and techniques

The research was conducted between October 2011 and May 2012, in Bacau.

We were surprised to see that most of the inquired physical therapists were surprised and pleased that a study regarding the demands to which they are subjected, is being conducted. At the end of our discussions, we could identify the following types of disorders, according to the particularities of the physical therapy intervention.

Results and discussion

Table no. 2 **The specific particularities of the physical therapy profession**

Institutions	Name	Professional Experience (years)	Profile of the Physical Therapy intervention	Types of means, methods, and techniques that were frequently used	Acquired disorders
FSC	**A.E.**	10	Geriatrics	PNF Medical gymnastics Mobilizations: • passive • passive-active • active • active-resisted	Lumbago Coxarthrosis
GHIOCELUL	**C.H**	13	Pediatrics	Methods of neuro-motor reeducation: • Bobath • Vojta PNF Massage therapy Medical gymnastics	Right thoracic-left lumbar S-curve scoliosis Cervical spondylosis
BETANIA	**C.R**	3	Pediatric neurology	Methods: • Bobath • Vojta PNF Massage Medical gymnastics	Lumbago Incipient osteoarthritis of the hand, fist
	L.I.	3	Pediatric neurology	Methods: • Bobath • Vojta PNF Medical gymnastics Hydrotherapy Respiratory gymnastics Passive mobilizations	Lumbago Incipient kyphosis
PISTRUIATUL	**G.R**	7	Pediatrics	Stretching Passive mobilizations Massage therapy PNF Methods of neuro-motor reeducation: • Kabat • Bobath	Lumbalgias
BACAU	**G.A.**	4	Orthopedic Trauma Neurology	PNF Medical gymnastics Massage therapy Mobilizations: • passive	-

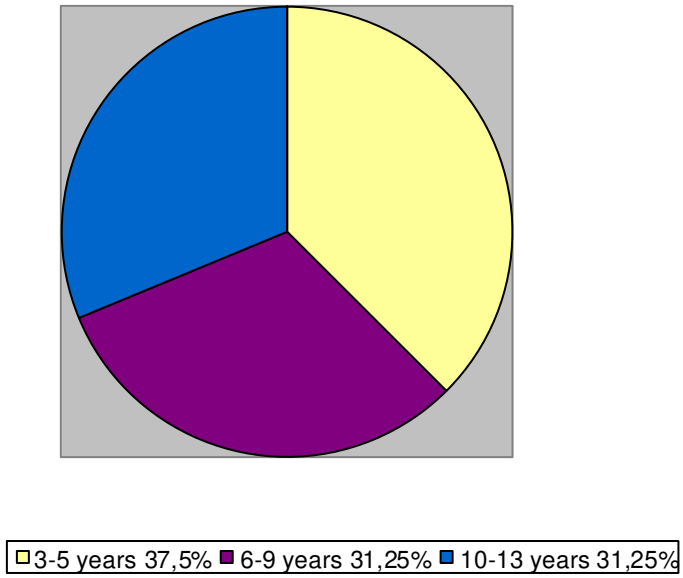
COUNTY HOSPITAL				• passive-active • active • active-resisted Stretching	
	R.B.	8	Orthopedic Trauma	PNF Respiratory gymnastics Mobilizations: • passive • passive-active • active • active-resisted	Lumbosciatic syndrome, radiating left leg pain Contractures in the paravertebral muscles
	L.S	7	Orthopedic Trauma	PNF Respiratory gymnastics Mobilizations: • passive • passive-active • active • active-resisted	Cervical spondylosis Scapulo-humeral periarthritis Lumbosciatic syndrome radiating right leg pain
PRIVATE PRACTICE	**A.M.**	10	Neurology Pediatrics	Methods of neuro-motor reeducation: • Kabat • Bobath PNF Massage therapy	Cervical spondylosis
	R.L	12	Rheumatology	Deep tissue massage Manual Therapy	L4-L5-S1 spinal disc herniation Right C-curve scoliosis Incipient osteoarthritis of the hand, fist
	P.D.	10	Orthopedic Trauma Neurology	Massage therapy PNF Methods: • Bobath • Kabat • Frenkel	Lumbar discopathy L4-L5 with posterior tight pain
	R.M	6	Pediatrics Orthopedic Trauma	Methods: • Vojta • Bobath Manual Therapy	Acromioclavicular separation Finger capsulitis
	B.M.	3	Rheumatology Pediatrics Neurology	Deep tissue massage Tractions Manual Therapy	Lumbosciatic syndrome
	D.C.	3	Rheumatology Pediatrics	Deep tissue massage Tractions Medical gymnastics	Dorsalgias Lumbalgias

	B.A.	5	Neurology	Electrotherapy Mobilizations PNF Respiratory and medical gymnastics	Cervical spondylosis
	C.V.	8	Pediatrics	Massage therapy PNF Bobath Electrotherapy	Lumbosciatic syndrome Left C-curve scoliosis

In this research, 16 Bacau physical therapists were interviewed, out of which 12 were female, and 4 male. After collecting and interpreting the data, the subjects of this study have been classified according to their professional experience in the field of physical therapy, as follows:

Table no. 3 **The physical therapists and their professional experience**

No.	NAME	YEARS.
1.	**A.E.**	10
2.	**C.H**	13
3.	**C.R.**	3
4.	**L.I.**	3
5.	**G.R**	7
6.	**G.A.**	4
7.	**R.B.**	8
8.	**L.S**	7
9.	**A.M.**	10
10.	**R.L**	12
11.	**P.D.**	10
12.	**R.M**	6
13.	**B.M.**	3
14.	**D.C.**	3
15.	**B.A.**	5
16.	**C.V.**	8



Graphic no.1. **Dynamics of the number of physical therapists according to the years of professional experience in the field**

The figure representing the dynamics of the number of physical therapists according to the years of professional experience in the field shows the following aspects:

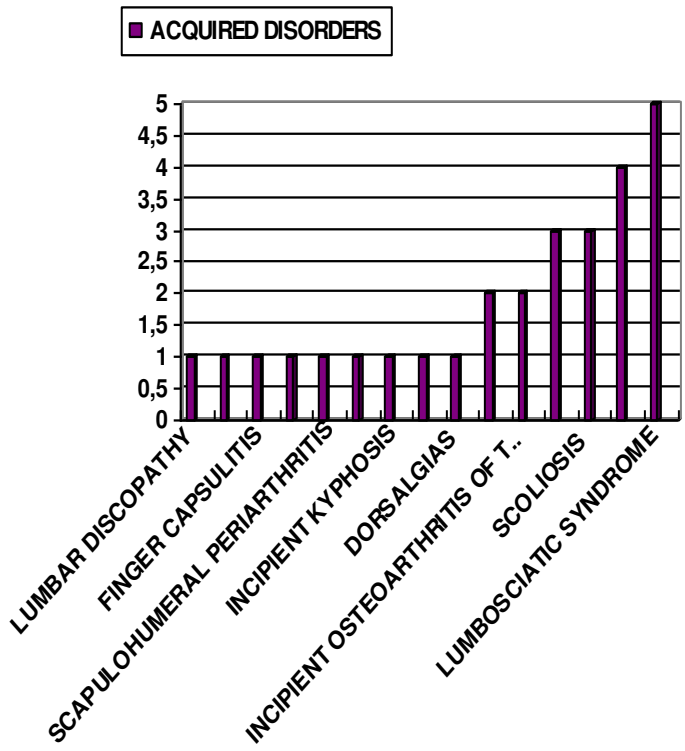
- 37.5% of the total studied physical therapists have a professional experience between 3 and 5 years;
- 31.25% of the total studied physical therapists have a professional experience between 6 and 9 years;
- 31.25% of the total studied physical therapists have a professional experience between 10 and 13 years;

As a result of their years of experience, the 16 physical therapists studied in this paper have acquired the following disorders:

Table no. 4 **The various disorders acquired by the physical therapists during their practice**

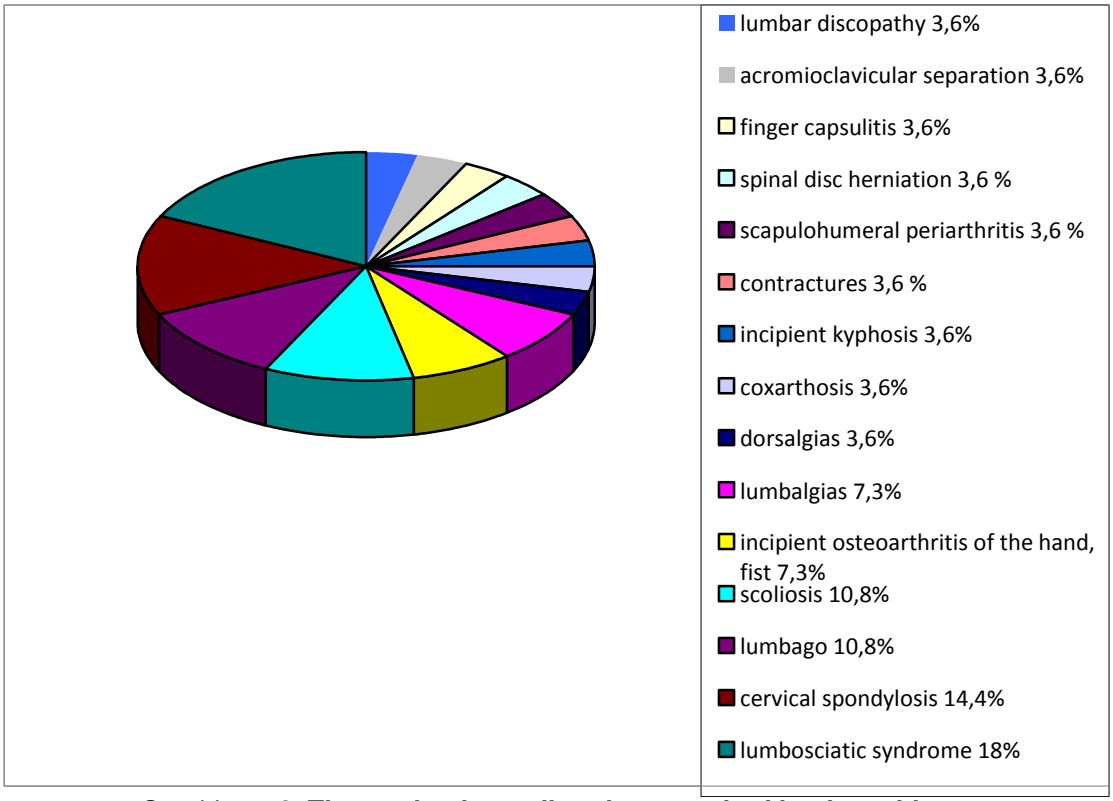
No.	NAME	ACQUIRED DISORDERS
1.	**A.E.**	LUMBAGO, COXARTHROSIS
2.	**C.H**	RIGHT THORACIC-LEFT LUMBAR S-CURVE SCOLIOSIS, CERVICAL SPONDYLOSIS
3.	**C.R.**	LUMBAGO, INCIPIENT OSTEOARTHRITIS OF THE HAND, FIST
4.	**L.I.**	LUMBAGO, INCIPIENT KYPHOSIS
5.	**G.R**	LUMBALGIAS
6.	**G.A.**	NONE
7.	**R.B.**	LUMBOSCIATIC SYNDROME RADIATING LEFT LEG PAIN, CONTRACTURES IN THE PARAVERTEBRAL MUSCLES
8.	**L.S**	CERVICAL SPONDYLOSIS, LUMBOSCIATIC SYNDROME RADIATING RIGHT LEG PAIN

9.	**A.M.**	CERVICAL SPONDYLOSIS, LUMBOSCIATIC SYNDROME, SCAPULOHUMERAL PERIARTHRITIS
10.	**R.L**	L4-L5-S1 SPINAL DISC HERNIATION, RIGHT C-CURVE SCOLIOSIS, INCIPIENT OSTEOARTHRITIS OF THE HAND, FIST
11.	**P.D.**	LUMBAR DISCOPATHY
12.	**R.M**	ACROMIOCLAVICULAR SEPARATION, FINGER CAPSULITIS
13.	**B.M.**	LUMBOSCIATIC SYNDROME
14.	**D.C.**	DORSALGIAS, LUMBALGIAS
15.	**B.A.**	CERVICAL SPONDYLOSIS
16.	**C.V.**	LUMBOSCIATIC SYNDROME, LEFT C-CURVE SCOLIOSIS



Graphic no.2. **The various disorders acquired by the physical therapists during their practice**

After analyzing the data in Table no. 2 and Figu Graphic no.2., it is clear that 4 of the 15 subjects have only one acquired disorder, such as cervical spondylosis, lumbosciatic syndrome, lumbar discopathy, and lumbalgias. Each of the other 11 subjects has two, maximum three disorders. An exception is the subject G.A., who says she did not acquire any disorder during her practice as a physical therapist.



Graphic no.3. **The predominant disorders acquired by the subjects**

Interpretation of the data

Graphic no.1, presenting the dynamics of the number of physical therapists according to the years of professional experience in the field, highlights the fact that most of the subjects have a professional experience comprised between 3 and 5 years, representing 37.5% of the total number of physical therapists who were studied in this research, meaning 6 professionals. Five subjects have a professional experience in the field of physical therapy between 6 and 9 years, representing 31.25% of the total number of physical therapists who were studied in this research. Five subjects have over 10 years of professional experience, representing 31.25% of the total number of physical therapists who were studied in this research. We must emphasize the fact that the acquired disorders were not dependent on the practitioners' years of professional experience, or their gender, they have appeared as a result of the bad postures the subjects have had during their therapeutic sessions with the patient.

From **table no.4.** , presenting the various disorders acquired by the physical therapists during their practice, one can see that the subject G.A., with a 4-year experience in this field, did not acquire any disorder; on the contrary, she said she used her knowledge to correct her myo-artho-kinetic problems. The other physical therapists have at least one disorder acquired during their practice. Another thing that can be observed is that there is a diversity of disorders among the therapists, as Graphic no. 2 suggests, representing the various disorders acquired by the physical therapists during their practice. After analyzing the data, one can observe that 4 subjects out of 15 have each one acquired disorder, such as cervical spondylosis, lumbosciatic syndrome, lumbar discopathy, and lumbalgias. Each of the other 11 subjects has two, maximum three disorders. The lumbosciatic syndrome is present in 5 subjects, followed by cervical spondylosis, found in 4 subjects, out of 11.

In **graphic no.3,** presenting the predominant disorders acquired by the subjects, one can observe that lumbar discopathy, acromioclavicular separation, finger capsulitis, spinal disc herniation, scapulohumeral periarthritis, contractures, incipient kyphosis, coxarthrosis, and dorsalgias, each represent **3.6%** of the total disorders acquired by the subjects; incipient osteoarthritis of the hand and fist, and lumbalgias each represent **7.3%** of the total disorders acquired by the subjects; lumbago, and scoliosis each represent **10.8%** of the total disorders

acquired by the subjects; cervical spondylosis represents **14.8%** of the total disorders acquired by the subjects; lumbosciatic syndrome represents **18%** of the total disorders acquired by the subjects.

Conclusions

After collecting, analyzing, and interpreting the data, we could draw the following conclusions:

The first one was that the practice of physical therapy leads, over time, to one disorder or more that is specific to the myo-artho-kinetic system. After interviewing various physical therapists from different Bacau rehabilitation centers, state institutions, and private practices, we have found that the lumbosciatic syndrome and the cervical spondylosis were the most frequent disorders reported by the inquired subjects.

The second one was that the interviewed physical therapists were very receptive to the study. They have shown interest and cooperation with regards to sharing their professional experience, means and methods they use, and disclosing their acquired disorders. Also, the subjects were aware of the importance of postures, promising that they will be more careful in the future with regards to their positions when applying various physical therapy methods and techniques.

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