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The role of history taking in assessing the nature of low back pain and its individual and related clinical problems:A prospective study' (RESEARCH REPORT)

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ABSTRACT

Despite the high prevalence of low back pain(LBP)globally and the large range of health professionals engaged in its management,its sussessful clinical approach still remains elusive(Frymoyer et al., 1983).

Rationale,aims,objective:The aim of the study was to highlight the role of history taking in assessing the nature of low back pain and its individual and related clinical issues (Billis et al.2007).This prospective study was based on a longitude survey in an attempt at excluding clinical items(signs,symptoms,aggravating and relieving factors)that seem to correlate with the syndrome of low back pain(Billis et al.2009;Bilis et al.2012).**Study design**:A survey form called 'Archimedes III' was utilized for the role of history taking in assessing the nature of low back pain and its individual and related clinical issues. This prospective study was based on a longitude survey(Billis et al. 2009;Bilis et al.2012),which proved a reliable and valid tool while the Department of Physiotherapy Technological and Educational Institute of Western Greece took the initiative to perform the project.**Methods**:The survey form included a history(clinical questions),self-reported questionnaires and clinical tests.The Greek translation of these questionnaires provided reliable and valid instruments for the evaluation of Greek speaking patients with Low Back Pain(Zigmont et al 1983;Boscainos et al.2003). The patient interview begins with a series of questions to determine the specific syndrome. A subsequent physical examination supports or refutes the findings in histor.The study took place in Athens by a licenced physical therapist. **Results**:The findings revealed that there was a strong positive correlation between age and HAD scale ,p=0.001.In addition,there was a strong negative correlation between age and SF-12 quality of life(QoL)(physical and mental)p=0.020,p=0.017.Finally,a strong

positive relation between age and ROM lumbar-flexion p=0.00(Ware J.,1995)**Conclusions**: Combining information from the history with the findings of the physical examination, the clinician has the ability to rule out a number of potentially grim diagnoses.A clinical perspective capable of recognizing a defined syndrome at first contact will lead to a better outcome.Most patients with low back pain can be treated successfully with simple, pattern-specific, noninvasive primary management.Patients without a pattern and those who do not respond as anticipated require further investigation and specialized care (Powell et al.,2007)

***Key words**: history taking,low back pain,survey form,self-reported questionnaires,clinical tests,prospective study.*

Introduction

Low back pain especially when recurrent or chronic seems to be the most common musculoskeletal disorders affecting many people in Europe and the USA.As a symptom is occurred in several pathological,orthopedic and renal diseases(Powell et al 2010).

Low back pain (LBP) is a prevalent disorder involving the muscles, nerves of the vertebral column. Pain may vary from a dull constant ache to a sudden sharp feeling. As a symptom may be classified by duration as acute (pain lasting less than 6 weeks), sub-chronic(6 to 12 weeks), or chronic (more than 12 weeks). The disorder may be further classified by the underlying cause as either mechanical, non-mechanical, or referral pain. The symptoms of low back pain usually improve within a few weeks from the time they start, with 40–90% of people completely better by six weeks(Deyo et al 1987). Approximately 9–12% of people (632 million) suffer from LBP at any given point in time, and nearly 25% report having the symptom at some point over any one-month period(Nachemson et al 1992).

The clinical picture implies severe pain in lumbar area,a significant limitation of lumbar mobility and a deformity of vertebral column.The patient refers pain while coughing or sneezing and pain reflex in limber limbs while pressure.Pain seems to be developed after movements such as lifting, twisting, forward-bending or upon waking up the following morning. It may or may not worsen with particular movements, such as raising a leg, or positions, such as sitting or standing. Pain seems to radiate down the legs known as sciatica. The first episode of acute low back pain is typically between the ages of 20 and 40(Deyo et al 1987).

According to Wadell et al 1996,the extensive study in low back pain,the natural history and the effective therapy are facing a number of difficulties while the disease seems to be multifactorial and its treatment is global.Meanwhile,the prevalence of disability due to low back pain has dramatically increased in Western societies since 1970.

Undoubtedly,the determination of the appropriate treatment should be based on the appraisal of an accurate diagnosis for the rationale of lumbar and vertebral column pain.The detailed history taking,the clinical assessment,the evaluation of each patient and the exclusion of lumbar diseases that resemble low back pain may contribute to an holistic treatment and its stratification in patients who will receive the corresponding treatment(Solomonow et al.,1998).

The aim of the prospective study is the appraisal of history taking using a planned survey form,specific medical questions relavant to the situation,clinical tests and six self reported questionnaires in an attempt to investigate the nature of low back pain and its individual clinical problems.The interest of the research is focused on the dissimilarity of the approach,reflecting the obvious and long term benefits of low back syndrome.

Undoubtedly,it is imperative that the prosecution of several studies which will be based on evidence based research in order to contribute to the configuration of the ideal therapeutic scheme(Powell et al.,2010).

Materials and Methods

Participants

Subjects were recruited from a randomized sample population of Greek citizens.The patients were included in the study while they met the inclusion criteria and after the relavant notification and the written consent participated in the research.There was a clarification that there was no economic benefit and it was noted the importance of their participation in favour of the prospective profit.

Inclusion criteria

Participants were included if they were between 18 to 60 years old with acute pain in lumbar or sacral spine,Greek citizens,being volunteers.

Exclusion criteria

Participants were excluded from the prospective research while they were under operation of spinal spine,cardiovascular problems,addiction,pregnancy and physhopathology disorders.

Participants

Finally,the participants that met the criteria were 30,while only 28 accept to participate in the survey form called 'Archimedes III' and to complete the six self reported questionnaires.A total of 28 participants,only 22 took part in clinical trials,while the six ones withdrew for personal issues(Figure 1 Methodology of Prospective study)

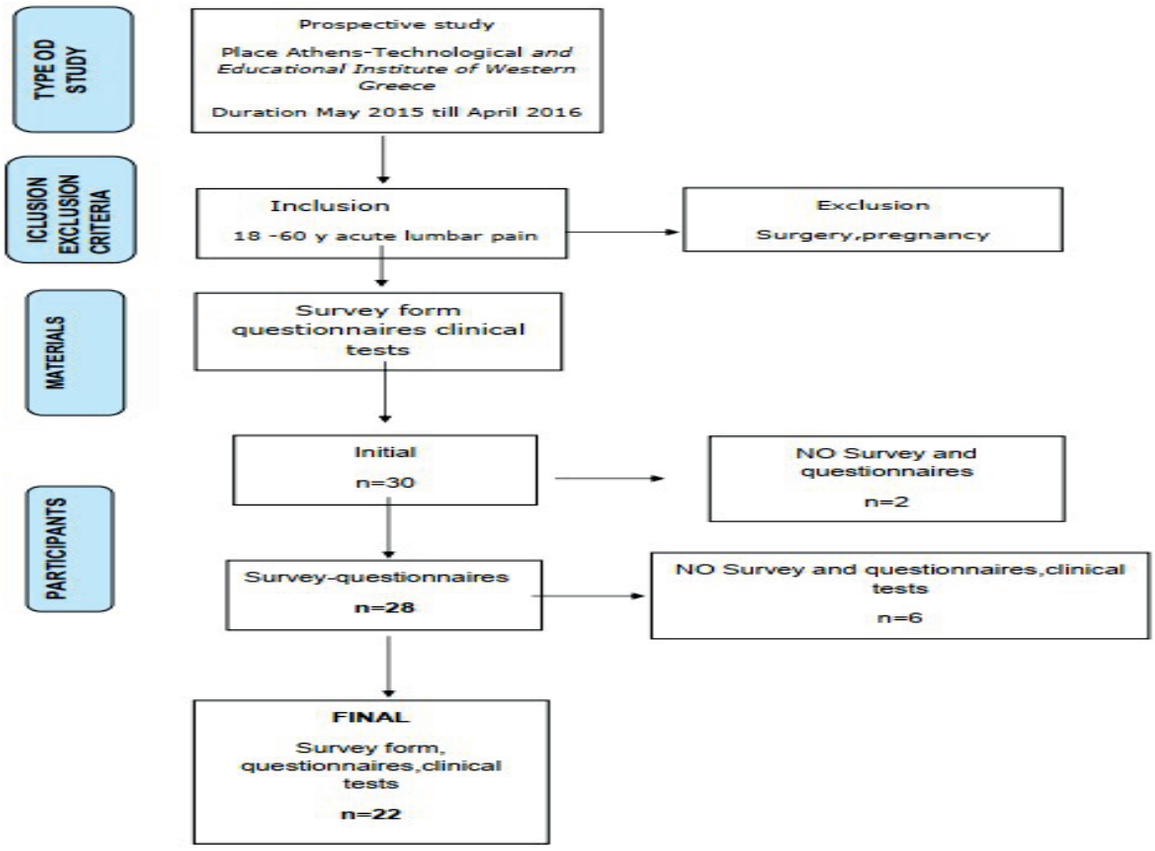

Figure 1 Flow chart Methodology of study Procedure

Measurements

The usage of measurements were:

- self-reported questionnaires which are evaluated of Greek speaking patients with Low Back Pain(Rolland Morris 1983;Boscainos et al.2003)
- a survey form and a number of clinical tests(Billis et al 2009;Billis et al 2012)

Self-reported questionnaires

The self-reported questionnaires were aimed at evaluating the lumbar spine and they were:

- Roland-Morris for disability
- Maine-Seattle Back Quest.(MSBQ)
- STarTBAck screening tool for prognosis and as questionnaires referring to health
- Hospital Anxiety and Depression(HAD)scale for stress and depression

- SF-12 for the quality of life(QoL)
- Sciatica Bothersomeness Index(SBI) as a self-reported questionnaire for the evaluation of sciatica(Zigmont 1983;Rolland Morris 1998)

Survey form

The particular survey was designed as a result of long term study in order to conclude the appropriate clinical signs(symptoms,signs,factors)that are related to LBP non specific(Billis et al 2009).At a later date,it was judged as a reliable tool of examination with efficient validity among researchers(Billis et al 2012).The design of the survey included three phases.In the first one,there was an initial contact with the participapts in order to inform them for the research framework.We asked participants for their written consent before participating.In the second phase,the candidates completed a survey form called 'Archemedes III',which included a full description of the anthopometric chacteristics that related to low back pain and sciatica.In addition,they completed six self reported questionnaires which were translated for Greek population.Finally,the third phase included an objective evaluation with a series of clinical tests sush as an observation of the posture,general observation(facial expression),lumbar stability(repeated and combined movements),neurological examinations,sensation,anterior-posterior glides,straight leg raise,pelvic range of movement.All data were totally confidential.A licensed physical therapist performed the above procedure.This particular study form was the product of a longitude survey which aimed to the extraction of clinical items(signs,symptoms,characteristics)related to low back pain no specific aitiology(Billis et al 2009)

Description of clinical assessment

The assessment concluded a full description of antropometric chacteristics(sex,age,weight,height,BMI,accommodation,education,profession etc)and a series of questions that related to the disease and to the diagnosis.The natural history encompassed the present history(location- quality-intensity-24 hour behaviour of pain)the history of condition(length of symptoms,location of onset),the psychological history(patient's pain behavior,emotional status) and the medical history(diagnosis,drugs,doses of NSAID's,red flags,etc).The clinical assessment was structured in order to perform a series of clinical tests such the evaluation of posture(upright position,supine,prone),active movements for lumbar stability,repeated and combined movements(open-closed patent)(McKenzie R.1981;Billis et al 2010).

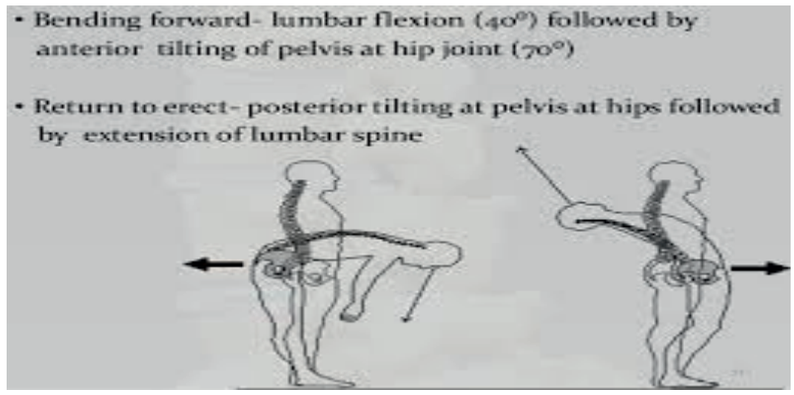

Figure 2 Clinical tests Modified from www.slideshare.net

The neurological examination included myotomes,sensation,reflexes,straight leg raise,palpation in pelvic area.glides for investigating the hyperactivity and the reproduction of symptoms(Billis et al 2010).Finally,the survey form was fulfilled with the clinical aspect of the licensed physical therapist as far as it was concerned the predominant pain,the pain behavior during the examination and the clinical 'feeling' of the problem.The description of pain was based on a valid tool(Billis et al 2009)(Figure 2)

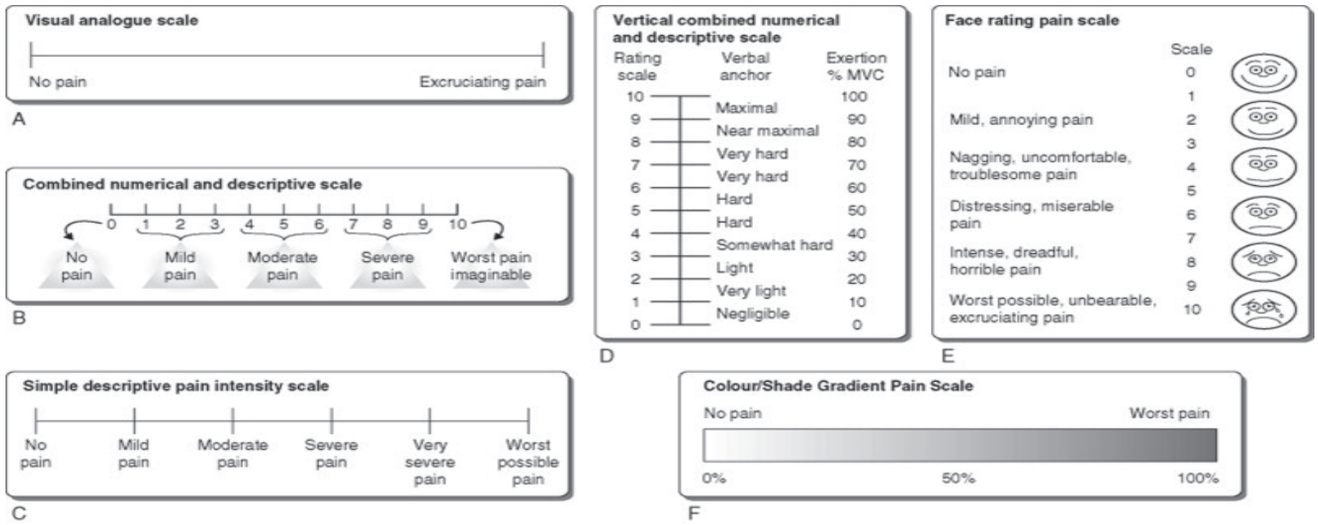

Figure 3 ***VAS Adopted from sciencedirected.com***

In adittion,Visual Analogue Scale (VAS) leg pain and VAS back pain is measured 0-10cm, with 0"no pain" and 10 "worst pain ever". Both were reported for "today", "least level of pain over the past 2 weeks", and "greatest level of pain over the past 2 weeks". VAS is responsive in a chronic LBP population with a reported MCID of 2.0 (Gould et al. Visual Analogue Scale (VAS). Journal of Clinical Nursing 2001(Figure3)

Data Analysis

Data were analysed utilizing Superior Performance Software System SPPS 17.0.Particularly,for the description of the quantity and the quality of the characteristics of the sample the results are presented with correlation with the aid of crosstabs and the usage of Pearson and Bivariate analysis and x square test. Finally,the choice of p-value as a level of marginal significance within a statistical hypothesis test represented the probability of the occurrence of a given event. A smaller p-value means that there is stronger evidence in favor of the alternative hypothesis(p 0.05)(Koutsogiannis K.,2006;Galanis P., 2012)

Results

A total of 28 self reported questionnaires and a survey form were completed in the first round while a total of 22 self reported questionnaires,a survey form and clinical tests were fulfilled in the second one.The initial number of participants was 30 while 2 dropped out for personal reasons,20 women(71.4%) and 8 male(28.6%) with mean 1.71.

Among 28 participants,only 22 fulfilled the survey form,self reported questionnaires and the clinical tests.The range of age was 18 till 60 years old with mean 36,21±12,95(Deyo RA et.a.1987). A total presentation of their descriptive charecteristics included antropometric features such as height,weight,BMI,physical fitness,age,sex,profession,education,marital status(Figure 4)

Descriptive characteristics

	N	Minimum	Maximal	Mean		Standard deviation
sex	28	1	2	1,71	,087	,460
height(cm)	28	155,00	183,00	167,7143	1,55827	8,24557
weight(Kg)	28	48,00	120,00	69,3071	2,81909	14,91720
BMI((Kg/m2)	28	17,59	37,04	24,6925	,92699	4,90518
Physical fitness	28	0	2	,43	,140	,742
age	28	18	60	36,21	2,447	12,948
profession	20	1	2	1,60	,112	,503
education	28	1	4	3,29	,135	,713
Marital status	28	1,0	4,0	1,714	,1531	,8100

Figure 4 Descriptive characteristics

In addition,participants fulfilled six self reported questionnaires while participated in six clinical tests and responded in a series of questions(Figure 5,6).

6 SELF REPORTED QUESTIONNAIRES

	N	Range	Minimum	Maximal	Mean		Stand Dev.	Variance
STarTBack Total	28	8	0	8	3,21	,386	2,043	4,175
Maine-Seattle Total	28	9,00	13,00	22,00	18,3929	,50484	2,67137	7,136
SBI Total	28	25,00	,00	25,00	11,7143	1,45829	7,71654	59,545
Roland-Morris Disability Questionnaire	28	17	1	18	6,57	,869	4,598	21,143
HAD-Anxiety subcategory (1+3+5+7+9+11+13)	28	14	0	14	7,36	,744	3,937	15,497
HAD-Κατάθλιψη-υποκατηγορία (2+4+6+8+10+12+14)	28	20	0	20	4,89	,804	4,254	18,099
SF-12 Physical fitness	28	30,60	27,60	58,20	43,9929	1,74298	9,22300	85,064
SF-12 Mental	28	38,50	22,20	60,70	43,8321	1,74615	9,23973	85,373

8 CLINICAL TESTS AND OTHER QUESTIONS

	N	Minimum	Maximal	Mean		Stand Dev.
MRI	26	1	2	1,69	,092	,471
DIAGNOSIS	18	0	0	,00	,000	,000
PREVIOUS HEALING	26	1	2	1,50	,100	,510
REWARD	27	2	2	2,00	,000	,000
VAS –WORST (LUMBAR)	28	4	10	7,64	,248	1,311
POSTURE-ABNORMAL	28	0	2	1,46	,158	,838
LORDOSIS	28	0	2	1,07	,145	,766
ROM LUMBAR	28	0	3	2,11	,232	1,227
REPEATED-FLEXION	22	1	2	1,32	,102	,477
CLOSED PATENT	22	1	2	1,36	,105	,492
ANTERIOR pelvic tilt	22	1	3	2,64	,124	,581
SLR	22	1	3	2,27	,164	,767
POSTERIOR-ANTERIOR SLIDES L4	22	2	3	2,82	,084	,395
POSTERIOR-ANTERIOR SLIDES - L5	22	2	3	2,95	,045	,213
POSTERIOR-ANTERIOR SLIDES - S1	22	2	3	2,64	,105	,492
DOMINANT PAIN	28	1	4	1,21	,149	,787

Figure 6 Clinical tests and other questions

Discussion

According to the theoretical basis and the results of the data analysis it appeared that participants suffer from mild,moderate and severe symptoms in lumbar spine which reflect that the quality of life plays a major role.Actually,the majority of the disorders matter that the following variables such as age,sex,physical fitness,BMI,body posture,psychological and other factors may aggraviate or relief the patient.

In additionally,sex seems to play a major role as women are suffering more than men.This assertion has to do with the different biomechanical profile in lumbar spine among women and men(difference in pelvic,tendoms' support etc)and a series of psychological items(personality,pain behavior)(Olsen et al 1992;Van Korff et al.,1993;Waddell et al 1998).

Age seems to correlate positively with many accidents of low back pain and long term absence from work due to the degeneration of lumbar vertebral column and facets.This means that there is an obvious disorder of the dynamic stability of lumbar spine and lack of range of motion(Loney PL, Stratford PW. 1999).

In our survey,there was a positive correlation between age and lumbar flexion p=0.00.The above result is due to the fact that bending or rotation may be connected with low back syndrome as a result of decreased lumbar mobility.That data agrees with many studies which attribute the situation to the disorder of lumbarpelvic rtythm and the lack of mobility in hamstrings(Magora A.,1973;Frymoyer JW. et.al.,1983;Damkot DK.et.al.,1984).

The prevelence of distribution and the percentages of our survey reflect that there is a positive correlation between age and a self-reported questionnaire such as HADS(Hospital Anxiety Depression Scale p=0.001 and a negative correlation between age and SF-12(physical mental)p=0.020 & p=0.017.

6 SELF REPORTED QUESTIONNAIRES

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Correlations

		Age	1.5 Aggravating position - Bending	4.1 Posture – Lordotic	5.1A Lumbar ROM - mobility in flexion
Age	Pearson Correlation	1	,022	,443*	**,644****
	Sig. (2-tailed)		,910	,018	,000
	N	28	28	28	28
1.5 Aggravating position – Bending	Pearson Correlation	,022	1	,190	-,030
	Sig. (2-tailed)	,910		,333	,881
	N	28	28	28	28
4.1 Posture – Lordotic	Pearson Correlation	,443*	,190	1	**,622****
	Sig. (2-tailed)	,018	,333		,000
	N	28	28	28	28
5.1A Lumbar ROM - mobility in flexion	Pearson Correlation	**,644****	-,030	**,622****	1
	Sig. (2-tailed)	,000	,881	,000	
	N	28	28	28	28

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Age	1.2α. VAS -pain at worst (BACK)	HAD-Anxiety subscale (1+3+5+7+9+11+13)	HAD-Depession subscale (2+4+6+8+10+12+14)
Age	Pearson Correlation	1	,393*	**,575****	**,600****
	Sig. (2-tailed)		,039	,001	,001
	N	28	28	28	28
1.2α. VAS -pain at worst (BACK)	Pearson Correlation	,393*	1	,169	,464*
	Sig. (2-tailed)	,039		,390	,013
	N	28	28	28	28
HAD-Anxiety subscale (1+3+5+7+9+11+13)	Pearson Correlation	**,575****	,169	1	**,518****
	Sig. (2-tailed)	,001	,390		,005
	N	28	28	28	28
HAD-Depession subscale (2+4+6+8+10+12+14)	Pearson Correlation	**,600****	,464*	**,518****	1
	Sig. (2-tailed)	,001	,013	,005	
	N	28	28	28	28

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The above data reinforce that age may be positively correlated with several psychosocial factors such as anxiety,depression and quality of life and agrees with other reasearches(Zigmond & Snaith 1983).It seems that the negative reflection of these factors and the deficiency in physical fitness in accordance to aging inflame the vicious cycle of pain-muscle spasm,establishing disability and a deficiency in occupational and social area(Delitto et al. 1995;Croft et al.1996).

Limits

Probably,the major limitation of the study was the sample was small which did not allow us to measure the degree of convariance of the several variables.It is well known that the extended sample may represent a more reliable result.However,the a large number of participants cannot ensure accuracy (Cohen 1977).

Intentionally,there was no discrimination between specific and non specific low back pain because the disease is multifuctoral and its rehabilitation should be global.Nevertheless,we regard that we investigate the role of history taking in assessing the nature of LBP and its individual and related problem (Koppenhaver et al.,2012)

Conclusion

According to the theoretical basis and the results of the data analysis it appeared that participants suffer from mild,moderate and severe symptoms in lumbar spine which reflect that the quality of life plays a major role.Actually,the majority of the disorders matter that the following variables such as age,sex,physical fitness,BMI,body posture,psychological and other factors may aggraviate or relief the patient. This particular prospective study was based on a longitude survey(Billis et al. 2009;Bilis et al.2012),which proved a reliable and valid tool while the Department of Physiotherapy Technological and Educational Institute of Western Greece took the initiative to realise this project.In general terms there was no correlation with statistic effect among all variables.But there was there was a positive correlation between age and lumbar flexion p=0.00. The frequency of distribution and the percentages of our survey reflect that there is a positive correlation between age and a self-reported questionnaire such as HADS(Hospital Anxiety Depression Scale p=0.001 and a negative correlation between age and SF-12(physical mental)p=0.020 & p=0.017.The above data reinforce that age may be positively correlated with several psychosocial factors such as anxiety,depression and quality of life.It seems that the negative reflection of these factors and the deficiency in physical fitness in accordance to aging inflame the vicious cycle of pain-

muscle spasm,establishing disability and a deficiency in occupational and social area(Delitto et al. 1995;Croft et al.1996). Combining information from the history with the findings of the physical examination, the clinician has the ability to rule out a number of potentially grim diagnoses.A clinical perspective capable of recognizing a defined syndrome at first contact will lead to a better outcome.Most patients with low back pain can be treated successfully with simple, pattern-specific, noninvasive primary management.Patients without a pattern and those who do not respond as anticipated require further investigation and specialized care (Powell et al.,2007)

Prospective for novel research

In terms of further research,there is a strong evidence that studies are needed for testing the diagnostic value of these items on an extended sample.

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