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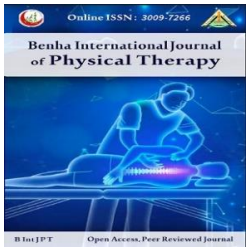


Original research

# Effect of Periodized Resistance Training Program on Non Specific Chronic Low Back Pain

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## Abstract

**Background:** Non-specific low back pain (NSCLBP) impacts individuals of all age groups and is a major factor contributing to the global disease burden. **Purpose:** This study aimed to investigate the effects of periodized resistance training on pain, disability, fear of movement, back and abdominal muscular endurance, upper body (latissimus dorsi) strength, and lower body (gluteus maximus) strength in individuals with NSCLBP**. Methods:** A single-group pretest-posttest clinical trial was conducted with 19 participants aged 18-45 years diagnosed with NSCLBP. Participants underwent baseline assessments followed by an eight-week periodized resistance training intervention, with training sessions held three times per week (each lasting 30-40 minutes). **Result:** The intervention resulted in statistically and clinically significant improvements, including reductions in pain intensity, disability, and fear of movement, and enhancements in hip extension strength, latissimus dorsi strength, and muscular endurance of the back and abdomen ($p < 0.001$ for all outcome measures). **Conclusion:** Periodized resistance training is an effective rehabilitation method for individuals with NSCLBP, leading to significant improvements in pain, disability, and muscular performance. Although promising, the study's single-group design limits the generalizability of the findings; future studies should incorporate controlled trials with larger sample sizes and long-term follow-up. **Keywords:** Exercise therapy, Functional disability, Muscle strength, Non-specific chronic low back pain, Periodized resistance training, ,.

## Introduction

Low back pain (LBP) represents a widespread health concern among individuals at various stages of life, manifesting as pain, muscle tension, or stiffness, regardless of accompanying leg pain[1]. When pain continues beyond three months, it is identified as chronic low back pain (CLBP) [2], which is influenced by several factors, including age, obesity, psychological stress, and occupational demands[3]. Approximately 90% of cases are nonspecific, meaning no specific pathology can be identified[2].

Exercise therapy is widely recognized as a primary physical therapy intervention for NSCLBP, with strong evidence supporting its role in reducing pain and improving function[4]. Various types of exercise therapy have been suggested for individuals suffering from NSCLBP, including

back school programs, muscle reconditioning, aerobic training, and stretching exercises [5,6]. Among these approaches, resistance training has gained attention as a beneficial approach for enhancing musculoskeletal function and alleviating symptoms of NSCLBP [7].

Extensive research has demonstrated that various resistance training techniques can contribute to symptom relief for CLBP [8, 9, 10, 11]. Additionally, resistance exercises offer notable psychosocial advantages, including decreased anxiety and reduced fear of falling, which together support improved physical function and activity levels [12, 13].

Vincent et al. compared two different resistance exercise programs, finding that total body resistance exercises were superior to isolated lumbar extension exercises in reducing disabilities, fear avoidance behaviors, and pain catastrophizing among NSCLBP patients [14].

While traditional resistance training methods have been extensively studied, emerging evidence suggests that structured, progressive resistance programs may further enhance neuromuscular adaptations, leading to better pain modulation and functional improvements. One such approach is periodization, which systematically adjusts training variables such as frequency, volume, intensity, and rest to optimize strength gains while preventing overexertion and physical injury [15]. Historically, periodization has been widely used in athletic training [7], but its application in rehabilitation settings, particularly for musculoskeletal conditions like NSCLBP, is gaining increasing attention [7].

Fritz et al. reported that periodized resistance training leads to superior outcomes compared to non-periodized resistance training for individuals suffering from NSCLBP [16]. This study aligns with the recommendations of the American Physical Therapy Association (APTA) guidelines for optimal exercise dosing parameters by evaluating the effectiveness of periodized resistance training in improving pain, disability, fear of movement, back and abdominal muscular endurance, upper body (latissimus dorsi) strength, and lower body (gluteus maximus) strength in individuals with NSCLBP [17]. Therefore, this study aims to assess the impact of an eight-week periodized resistance training program on key functional and clinical outcomes in individuals with NSCLBP.

## Methods

### *Study Design:*

This study was designed as a single-group pretest-posttest clinical trial to evaluate the effects of periodized resistance training on individuals with NSCLBP. The study commenced in May 2023 and ended in October 2024, and The Resistance training (RT) sessions were carried out at the Physical Therapy Department of Nasser Institute for Research and Treatment Hospital. Ethical approval was obtained from the Faculty of Physical Therapy, Cairo University, under registration number **P.T.REC/012/004889.**

### *Participants:*

Nineteen male and female patients aged 18 to 45 years, diagnosed with NSCLBP were recruited through referrals from orthopedic surgeons. Inclusion criteria included non-specific (non-specific pathology), chronic pain (>3 months), Body Mass Index (BMI) between 18-25 kg/m$^2$, Visual Analogue Scale (VAS) score of 3-8 cm, and the Arabic version of Oswestry Disability Index (ODI-AR) score of 10-60 (see Appendix I). Exclusion criteria included pregnancy, infections, fractures, tumors, structural deformities (e.g. scoliosis), radicular syndrome, cauda equina syndrome, and inflammatory disorders. All participants provided written informed consent before enrollment (see Appendix II).

### *Sample Size:*

The sample size was determined based on anticipated changes in pain intensity measured by the VAS, as Kell et al. (2009) reported. A power of 90% and an alpha (α) level of 0.05, were used, along with two measurements and an effect size of 0.6, applying the F-test MANOVA for within and between interaction effects. The required sample size was 19 participants. This calculation was performed utilizing the G*Power software (version 3.0.10).

### *Procedures:*

**Assessment Procedures:** All participants underwent baseline assessments, followed by an eight-week intervention period, after which post-intervention assessments were conducted.

### *1.Assessment of Pain Level:*

Pain intensity was assessed using the VAS, with participants indicating their pain level on a 10 cm line, where 0 meant 'no pain' and 10 indicated the 'worst pain' possible [18].

***2.Assessment of Disability:***

The Arabic version of the Oswestry Disability Index (ODI-AR) was utilized to assess participants' back function. For each item on the scale, participants selected the response that best described their condition. Scores were determined by calculating the percentage of total points relative to maximum possible points. A total score of 0–20% represented 'minimal disability,' 20–40% represented 'moderate disability,' 40–60% signified 'severe disability,' 60–80% indicated a 'housebound' status, and a score above 80% corresponded to being 'bed-bound'[19].

***3.Fear of Movement Assessment:***

Fear of movement was evaluated using the Arabic version of the TAMPA Scale of Kinesiophobia (TSK-AV). This 17-item assessment utilized a four-point response scale ranging from 'strongly disagree' (1) to 'strongly agree' (4). Total scores fell between 17 and 68, where higher values reflected heightened movement-related fear (see Appendix III) [20].

***4. a- Assessment of Hip Extension Strength.***

The Hand-Held Dynamometer (HHD) was utilized to evaluate hip extension strength. Patients were instructed to lean forward on a plinth while keeping the non-tested leg extended and positioning the tested leg in a flexed hip position of 45° with the knee fully extended. The therapist placed the HHD 5 cm proximal to the knee joint line (see Figure 1) and then guided the patient to push their leg into the hip extension [21].

**Figure. (1):** Demonstration of hip extension strength assessment using a hand-held dynamometer. A belt is used to stabilize the pelvis, and the dynamometer is placed 5 cm proximally to the knee joint line while the patient pushes against resistance.

***4. b-Assessment of Latissimus Dorsi Muscle Strength:***

A Hand-Held Dynamometer (HHD) was utilized to evaluate latissimus dorsi muscle strength while subjects were positioned prone. The assessment protocol required the shoulder to be positioned at 45° extension with maximal medial rotation and the elbow fully extended. The dynamometer was positioned on the posterior surface of the distal humerus just superior to the elbow joint (see Figure 2). Resistance was applied perpendicular to the humerus in the direction of shoulder flexion [22].

**Figure. (2):** Demonstration of latissimus dorsi muscle strength assessment using a hand-held dynamometer.

***5-Assessment of Back Isometric Muscular Endurance:***

Back isometric muscular endurance was evaluated using the Biering-Sorensen Back Endurance test (BSBE). The patient lay prone with the upper body unsupported and positioned horizontally from the upper border of the iliac crest. The pelvis and legs were secured to the plinth by three straps, and the arms were positioned across the chest in a crossed manner. Testing continued until positional failure occurred or until reaching the 240-second maximum time limit (see Figure 3)[23].

**Figure. (3):** Demonstration of the Biering-Sorensen Back Endurance Test. The examiner measures the time until the patient can no longer hold this posture.

***6.Assessment of Abdominal Muscular Endurance:***

Abdominal muscular endurance was assessed utilizing the abdominal muscular endurance test. Participants were placed in a crook-lying position with their knees flexed at a right angle and arms extended, ensuring that the fingertips touched a tape strip placed perpendicular to the body on both sides. They were then instructed to slide their fingertips to a second tape strip positioned 3.5 inches away and hold the position for the maximum duration while avoiding contact loss. The test was terminated when the participant was unable to maintain the static curl-up position. The total duration from the start to the end of the test was recorded in seconds as the static abdominal muscle endurance time (see Figure 4) [24].

**Figure.(4):**Demonstration of the abdominal muscular endurance test. The patient slides the fingertips to a second strip 3.5 inches away and maintains the static curl-up position as the examiner records the duration.

***Treatment procedures:***

The exercise program included upper and lower body resistance training exercises utilizing free weights, machines, and bodyweight exercises, as illustrated in Table 1. The therapist performed a one-repetition maximum (1 RM) test at baseline to determine the initial exercise loads. Participants then performed exercises at 50% to 70% of their 1 RM value. This process of periodic 1 RM testing and training at 50% to 70% of the value is repeated every two weeks till the end of the study. Exercise prescription and progression guidelines adapted from American College of Sports Medicine (ACSM) resources for personal trainers are summarized in Table 1 [25].

## Results

***Statistical analysis:***

Data were analyzed using SPSS for Windows, version 26 (SPSS, Inc., Chicago, IL). Before the final analysis, data were screened to verify the assumptions for normal distribution, homogeneity of variance, and existence of extreme values. Statistical significance was set at $p < 0.05$. This screening was performed as a pre-requisite for conducting parametric tests to analyze differences.

Evaluating the mean values of the various parameters in the study group was conducted through repeated measures MANOVA to identify significant variations between the pre-and post-treatment interventions.

All 19 participants completed the study, with no adverse effects reported. The study group's demographic data indicated a mean age of 28.32 ± 5.44 years and a mean BMI of 22.85 ± 1.68 kg/m², with a gender distribution of 89.5% females (17) and 10.5% males (2).

A notable interaction effect of rehabilitation and time was observed across all measured variables ($p < 0.001$*) (Table2). The means of all dependent variables, as well as the mean differences and p values, are illustrated in Figure 5 and Table 3.

**Table 1.** Exercises and Corresponding Training Parameters. The table presents the resistance training exercises employed in the study, detailing the primary agonist muscles, equipment used, recommended volume (sets), intensity, rest intervals, and weekly frequency.

| Exercise | Primary Agonist Muscles | Equipment | Volume (sets) | Intensity (%1RM) | Rest (minutes) | Frequency (days/week) | Image of exercise |
|---|---|---|---|---|---|---|---|
| Leg Press | Gluteus Maximus | Machine | 1-3 | 50-70% | 1-3 | 2-3 |  |
| Lat Pulldown | Latissimus Dorsi | Machine | 1-3 | 50-70% | 1-3 | 2-3 |  |
| Abdominal Crunch | Rectus Abdominis, Obliques | Body Weight | 1-3 | N/A | 1-3 | 2-3 |  |
| Swiss Ball Crunch | Rectus Abdominis, Obliques | Body Weight | 1-3 | N/A | 1-3 | 2-3 |  |
| Prone Superman | Erector Spinae | Body Weight | 1-3 | N/A | 1-3 | 2-3 |  |

**Table 2:** Effect of timing of rehabilitation on all dependent variables in the study group

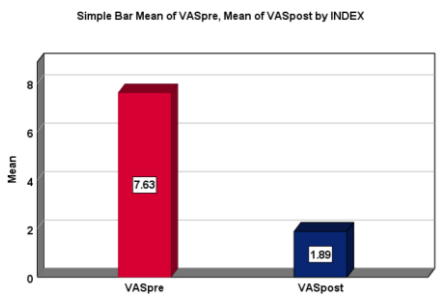
| Repeated measure MANOVA | | |
|---|---|---|
| **Effect of time** | | |
| **Variable** | **F-value** | **p-value** |
| **VAS** (pain) | 693.762 | $p < 0.001$* |
| **ODI** (Disability) | 94.154 | $p < 0.001$* |
| **TAMPA** (Fear of Movement) | 68.688 | $p < 0.001$* |
| **Hip Ext. Strength** (Rt) | 124.792 | $p < 0.001$* |
| **Hip Ext. Strength** (Lt) | 92.352 | $p < 0.001$* |
| **Latissimus Dorsi Strength** (Rt) | 164.508 | $p < 0.001$* |
| **Latissimus Dorsi Strength** (Lt) | 224.892 | $p < 0.001$* |
| **Back Isometric Muscular Endurance** | 176.995 | $p < 0.001$* |
| **Abdominal Muscular Endurance** | 2391.518 | $p < 0.001$* |

*Table 3: Mean, and within-group comparisons for all dependent variables in the study group.*

| Variable | Pre-Training $\overline{X}$ ± SD | Post-Training $\overline{X}$ ± SD | MD (CI 95%) | *p*-value | Sig |
|---|---|---|---|---|---|
| **VAS (pain)** | 7.63±0.831 | 1.89 ±0.937 | -5.737 | **<0.001*** | **S** |
| **ODI (Disability)** | 47.26±15.03 | 19.16 ±8.167 | -28.105 | **<0.001*** | **S** |
| **TAMPA (Fear of Movement)** | 43.58±3.595 | 33±4.583 | -10.579 | **<0.001*** | **S** |
| **Hip Ext Strength (Rt)** | 33.53±16.588 | 53.74 ±23.077 | +20.211 | **<0.001*** | **S** |
| **Hip Ext Strength (Lt)** | 27.11±15.588 | 45.58 ±22.816 | +18.474 | **<0.001*** | **S** |
| **Latissimus Dorsi Strength (Rt)** | 21.42±9.946 | 37.63 ±13.434 | +16.211 | **<0.001*** | **S** |
| **Latissimus Dorsi Strength (Lt)** | 17.89±9.837 | 30.89 ±12.49 | +13 | **<0.001*** | **S** |
| **Back endurance (sec)** | 22.21±7.969 | 60.32 ±21.179 | +38.105 | **<0.001*** | **S** |
| **Abdominal endurance (sec)** | 20.26±9.445 | 56.53 ±14.191 | +36.263 | **<0.001*** | **S** |

$\overline{X}$: Mean SD: Standard deviation MD: Mean difference

*p*-value: Probability value S: Significant

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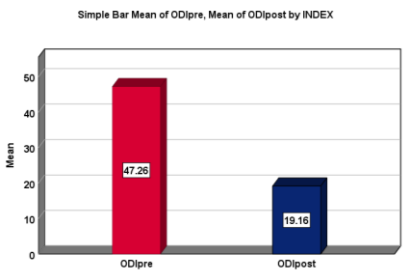


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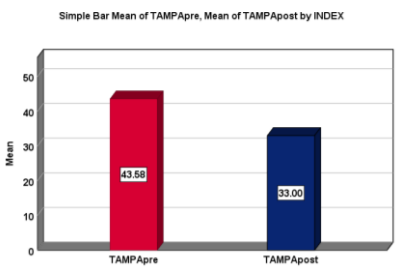


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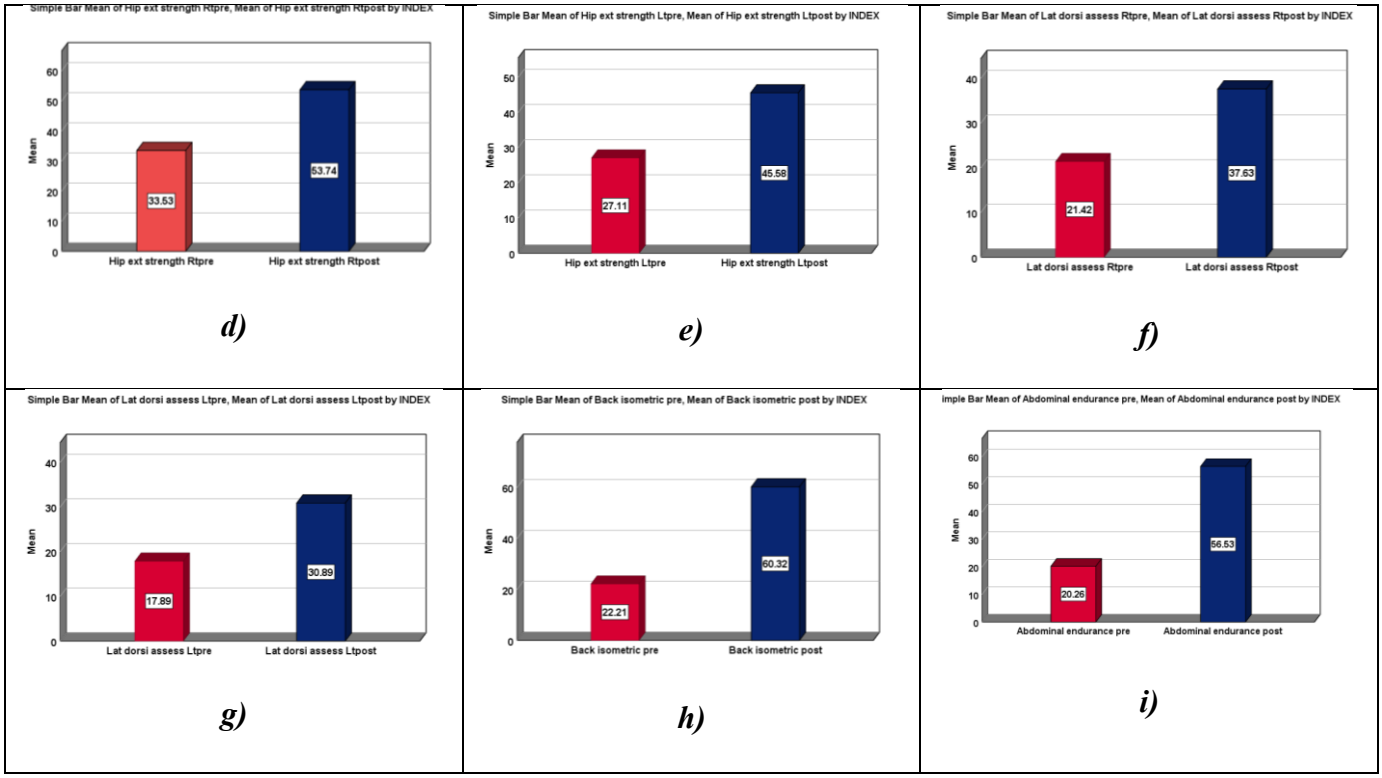


***Figure 5:*** Mean values of: a) VAS, b) ODI, c) TAMPA, d) Hip extension strength Rt, e) Hip extension strength Lt, f) Latissimus Dorsi Strength RT, g) Latissimus Dorsi Strength LT, h) Back endurance and i) Abdominal endurance.

***Interpretation of Findings:***

**Pain and Disability:** Marked reductions in VAS and ODI scores indicate that periodized resistance training effectively reduces pain and improves functional capacity.

**Fear of Movement:** The significant decrease in TSK scores suggests that the intervention effectively alleviates kinesiophobia, potentially enhancing patient compliance with exercise programs.

**Muscle Strength and Endurance:** Improvements in hip extension and latissimus dorsi strength, along with increased back and abdominal endurance, support the hypothesis that a structured, periodized approach optimizes neuromuscular adaptations in patients with NSCLBP.

## Discussion:

This study investigated the impact of a periodized resistance training program on pain intensity, disability, fear of movement, muscle strength (specifically hip extension and latissimus dorsi), and muscle endurance (back and abdominal muscles) in patients with NSLBP. The results revealed clinically significant improvement in all outcome measures.

Study findings are in line with Tjøsvoll et al. (2020)[15], who demonstrated that a structured and progressive periodized resistance training program promotes gradual improvements in muscle strength and endurance while reducing pain and enhancing function. The consistency between their results and current study observations underscores the importance of periodized training programs to optimize both physiological adaptations and facilitate functional recovery in chronic pain management.

Similarly, Jackson et al. (2011)[7] observed reductions in pain, disability, strength gains, and enhanced quality of life after periodized resistance training in individuals with NSCLBP. Their emphasis on progressive overload further validates this study approach, supporting the notion that a systematic increase in training demands is critical for an effective rehabilitation strategy for NSCLBP.

Mattocks et al., (2016)[26] Challenged the common belief that periodized training leads to better muscle growth or strength compared to non-periodized programs with progressive overload. They found little evidence supporting the idea that periodization is superior for increasing muscle strength or size, suggesting that traditional progressive resistance training might be just equally effective for some individuals. The authors also pointed out that periodization may be helpful for athletes who need to plan training around their sport's schedule.

Moreover, Santamaria et al. (2023)[27] highlighted the importance of incorporating hip muscle-strengthening exercises to reduce pain and improve functional outcomes for individuals with NSCLBP. Although present study focused on periodized resistance training overall, integrating targeted hip muscle exercises might further address muscle imbalances that contribute to LBP, reinforcing the value of a comprehensive, patient-centered rehabilitation strategy.

Additionally**,** improvements in muscular strength and endurance were evident, particularly in hip extension, latissimus dorsi strength, and back endurance (Gordon & Bloxham, 2016)[28]**.** These gains are functionally significant as they contribute to spinal stability and postural control—both crucial factors for individuals with NSCLBP (Segura-Jiménez et al., 2024)[29]. Enhanced muscular strength may also help reduce pain by improving load distribution and decreasing strain on the lumbar spine (Gordon & Bloxham, 2016)[28]. These results reinforce the value of the periodized resistance training program used in this study, highlighting their potential role in improving functional performance and alleviating symptoms in individuals with NSCLBP.

In addition, the reduction in fear of movement observed in this study complements the work of Palstam et al. (2016)[30], who found that fear-avoidance beliefs can exacerbate pain-related disability. Their findings, derived from research on progressive resistance exercise in fibromyalgia, underscore the significance of addressing psychological aspects alongside physical training in chronic pain management.

Nonetheless, a few limitations must be acknowledged. The single-group design limits the control over placebo effects and natural recovery over time. Furthermore, lack of follow up after the completion of treatment and short intervention duration may restrict the generalizability of these findings. Future studies should consider randomized controlled designs with larger, more diverse populations and incorporate long-term follow-up to assess the sustainability of improvements.

***Clinical implications:***

The findings of this study have important clinical implications. They suggest that periodized resistance training can be effectively integrated into rehabilitation programs for individuals with nonspecific chronic low back pain, offering a structured and progressive approach that not only reduces pain and disability but also enhances muscular strength and endurance. Improved spinal stability and postural control resulting from increased hip extension and latissimus dorsi strength may lead to better functional performance in daily activities, while the reduction in fear of movement can foster increased patient confidence and adherence to exercise regimens. Moreover, by serving as a non-pharmacological intervention, periodized resistance training minimizes the risks associated with long-term medication use and empowers patients through education on self-management strategies. Overall, these clinical benefits highlight the value of incorporating tailored, periodized resistance training protocols into treatment plans for chronic low back pain.

## Conclusion:

Periodized resistance training appears to be a highly effective in management individuals with NSCLBP. Future research should focus on validating these findings through larger, controlled trials and exploring long-term adherence and sustained benefits.

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# Appenx 1
# Arabic version ODI

**الفقرة 1:شدة الآلام:**
0-□ليس لدي الآلام في أسفل ظهري حاليا .
1-□أشعر حاليا بالآلام خفيفة في أسفل ظهري .
2-□أشعر حاليا بالآلام متوسطة في أسفل ظهري .
3-□ أشعر حاليا بالآلام شديدة الى حد ما في أسفل ظهري.
4-□أشعر حاليا بالآلام شديدة جدا في أسفل ظهري.
5-□أشعرحاليا بالآلام في اسفل ظهري أكثر مما يمكن تصورها .

**الفقرة 2:العناية الشخصية – كالإغتسال ولبس الثياب:**
0-□- يمكنني أن أعتني بنفسي واهتم بأموري الخاصة بشكل طبيعي دون أن يزيد ذلك في الآلام أسفل ظهري.
1-□- يمكنني أن أعتني بنفسي واهتم بأموري الخاصة ولكن ذلك يزيد في الآلام اسفل ظهري.
2-□- يمكنني أن أعتني بنفسي واهتم بأموري الخاصة ولكن يأخذ ذلك مني وقتا أطول من المعتاد.
3-□- أحتاج إلى بعض المساعدة ولكن يمكنني القيام بمعظم أموري الخاصة بنفسي .
4-□- أحتاج إلى المساعدة بشكل يومي للقيام بأموري الخاصة .
5-□- أبقي في سريري وأغسل بصعوبة ولا أستطيع أن ألبس ثيابي .

**الفقرة 3:رفع الأشياء ونقلها:**
0-□- أستطيع أن أرفع الأشياء الثقيلة من غير أن يزيد ذلك في الآلام أسفل ظهري.
1-□- أستطيع أن أرفع الأشياء الثقيلة ولكن ذلك يزيد في الآلام أسفل ظهري .
2-□-الآلام أسفل ظهري تمنعني من رفع الأشياء الثقيلة إذا كانت على الأرض, لكن يمكنني رفعها إذا كانت في مكان مرتفع-عل- كالطاولة مثلا.
3-□-الآلام أسفل ظهري تمنعني من رفع الأشياء الثقيلة, لكن بإمكاني رفع الأشياء الخفيفة ومتوسطة الوزن إذا كانت في مكان مرتفع-عال-.
4-□-أستطيع رفع الأشياء خفيفة الوزن فقط.
5-□- لا أستطيع رفع أو حمل أي شيء على الإطلاق.

**الفقرة 4:المشي:**
0-□-لاتمنعني الآلام أسفل ظهري من المشي لأي مسافة (كالمشي بجوار المنزل).
1-□- الآلام أسفل ظهري تمنعني من المشي أكثر من ألف وخمسمئة متر (كيلو ونصف) .
2-□- الآلام أسفل ظهري تمنعني من المشي أكثر من ألف متر (كيلومتر واحد).
3-□- الآلام أسفل ظهري تمنعني من المشي أكثر من أربعمئة متر.
4-□ - لا أستطيع المشي دون الاستعانة بعصا أو عكاز.
5-□- أبقى في الفراش معظم الوقت وازحف للوصول الى المرحاض (دورة المياه).

**الفقرة 5:الجلوس :**
0-□-يمكنني الجلوس على أي كرسي المدة التي أريدها.
1-□-يمكنني الجلوس فقط على كرسي مريح المدة التي أريدها.
2-□- الآلام أسفل ظهري تمنعني من البقاء جالسا على أي كرسي أكثر من ساعة .
3-□-الآلام أسفل ظهري تمنعني من البقاء جالسا على أي كرسي أكثر من نصف ساعة.
4-□-الآلام أسفل ظهري تمنعني من الجلوس لأكثر من عشر دقائق .
5-□-الآلام أسفل ظهري تمنعني من الجلوس مطلقا.

**الفقرة 6:الوقوف:**
0-□- أستطيع البقاء واقفا المدة التي أريد ها دون أن يزيد ذلك في الآلام أسفل ظهري.
1-□- أستطيع البقاء واقفا المدة التي أريدها ولكن ذلك يزيد في الآلام أسفل ظهري.
2-□-الآلام أسفل ظهري تمنعني من الوقوف لأكثر من ساعة.
3-□- الآلام أسفل ظهري تمنعني من الوقوف لأكثر من نصف ساعة.
4-□- الآلام أسفل ظهري تمنعني من الوقوف لأكثر من عشر دقائق.
5-□- الآلام أسفل ظهري تمنعني من الوقوف مطلقا.

**الفقرة 7:النوم :**
0-□- نومي لايضطرب أبدا بسبب الآلام أسفل ظهري.
1-□- يضطرب نومي احيانا بسبب الآلام أسفل ظهري .
2-□- أنام أقل من6 ساعات يوميا بسبب الآلام أسفل ظهري.
3-□- أنام أقل من4 ساعات يوميا بسبب الآلام أسفل ظهري .
4-□- أنام أقل من ساعتين يوميا بسبب الآلام أسفل ظهري.
5-□- لا أستطيع النوم مطلقا بسبب الآلام أسفل ظهري.

**الفقرة 8:الحياة الجنسية ( هذه الفقرة للمتزوجين أو من سبق لهم الزواج ومارسوا الحياة الجنسية , إذا لم ينطبق عليك هذا الشرط الرجاء الانتقال للفقرة رقم 9):**

0-□- حياتي الجنسية عادية ولا تسبب زيادة في الآلام أسفل ظهري.
1-□- حياتي الجنسية عادية ولكنها تسبب زيادة في بعض الآلام أسفل ظهري .
2-□- حياتي الجنسية تكاد تكون عادية ولكنها تسبب لي الآلاما شديدة في أسفل ظهري
3-□- حياتي الجنسية نادرة جداً بسبب الآلام أسفل ظهري.
4-□- حياتي الجنسية تقريباً مقطوعة بسبب الآلام أسفل ظهري.
5-□- الآلام أسفل ظهري تمنعني من الحياة الجنسية مطلقا.
6-□لم يسبق لي الزواج ولم امارس الحياة الجنسية.

**الفقرة 9:الحياةالاجتماعية ( زيارة و استقبال الأقارب والأصحاب،الخروج مع الاصدقاء, المشاركة في الاحتفالات أو الأنشطة الإجتماعية ...):**
0-□- حياتي الإجتماعية عادية ولا تزيد في الآلام أسفل ظهري.
1-□- حياتي الإجتماعية عادية ولكنها تزيد من حدة الآلام في أسفل ظهري.
2-□- الآلام أسفل ظهري لا تؤثر على حياتي الاجتماعية ولكنها تقلل من أعمالي التي تتطلب مجهودا كبيرا.
3-□ - تاثرت حياتي الاجتماعية وتقلصت علاقاتي مع الآخرين بسبب الآلام أسفل ظهري.
4-□- بسبب الآلام أسفل ظهري أصبحت حياتي الاجتماعية منحصرة في المنزل .
5 □- حياتي الإجتماعية انقطعت بسبب الآلام أسفل ظهري.

**الفقرة 10:السفر:**
0-□- استطيع السفر إلى أي مكان من غير أن يزيد ذلك في الآلام أسفل ظهري.
1-□- استطيع السفر إلى أي مكان ولكنه يزيد في الآلام أسفل ظهري.
2-□- الآلام أسفل ظهري شديدة ولكني استطيع تحمل السفر في حدود الساعتين.
3-□- الآلام أسفل ظهري تقيد رحلاتي (سفري) لأقل من ساعة.
4-□- الآلام أسفل ظهري تقيد رحلاتي القصيرة الضرورية (سفري القصير) لأقل من نصف ساعة.
5-□- الآلام أسفل ظهري تمنعني من السفر لأي مكان إلا لتلقي العلاج.
6-□-لم أسافر يوما ما (لم أفعل ذلك)

## Appendix 1

## CONSENT FORM

I am..... freely and voluntarily agree to participate in this research study conducted by the researcher/**Ahmed Said Mohamed.**

The procedures involved in this study have been clearly explained to me, and I understand that I may withdraw my consent and discontinue participation in this research at any time without prejudice to me.

Date / / 20 participant

**اقرار**

اقر انا الموقع ادناه على الاشتراك فى برنامج البحث تحت اشراف الباحث/ احمد سعيد محمد وقد تم شرح خطوات البحث لى بالتفصيل وانه من حقى ان انسحب فى اى وقت شاء

التاريخ:

التوقيع:

## Appendix III

## Arabic – Language Tampa Scale of Kinesiophobia

تاريخ اليوم: / /

تاريخ الميلاد: / / الحالة الزواجية: متزوج / غير متزوج الجنس: ذكر / انثى

مكان الالم: .....العمل: اعمل / لا اعمل

طول مدة الالم: .....سنة و .....شهر

في هذه الايام التي تتوفر فيها التقنية الطبية العالية، فانه عادةً هناك واحدة من المعلومات المهمة حولك تُفقد من سجلك الطبي: انفعالاتك و تخميناتك حول ما يجري في جسمك، نأمل أن المعلومات التالية ستساعدك على ملئ النقاط المفقودة.

.....

الرجاء الاجابة على الاسئلة التالية حسب المُتدرّج الموجود على اليمين. الرجاء ان تجيب حسب انفعالاتك، و ليس حسب ما يعتقد الآخرون حول ما يجب ان تؤمن به او تعتقده. هذا ليس امتحان معرفة طبي، نحن نريد ان نعرف كيف ترى انت الامور. ضع دائرة حول الرقم المُقابل للسؤال على ان يكون هذا الرقم هو لاكثر مُناسبةً لما تشعر به.

**1 = لا اوافق بشدة**
**2 = لا اوافق نوعاً ما**
**3 = اوافق نوعاً ما**
**4 = اوافق بشدة**

**اقرأ كل سؤال و ضع دائرة حول الرقم الذي يُشكل التمثيل الافضل لما تشعر به**

| | | | | |
|---|---|---|---|---|
| 1. اخشى ان أؤذي نفسي اذا مارست التمارين الرياضية | 1 | 2 | 3 | 4 |
| 2. اذا حاولت ان اتغلب على المي، فإنه سيزداد | 1 | 2 | 3 | 4 |
| 3. جسمي يخبرني ان هناك شيء ما خطأ بشكل خطِر | 1 | 2 | 3 | 4 |
| 4. اذا مارست التمارين الرياضية فإن المي على الأغلب سينخفض | 1 | 2 | 3 | 4 |
| 5. لا يأخذ الآخرون وضعي الصحي على محمل الجد بشكل كافٍ | 1 | 2 | 3 | 4 |
| 6. ما حصل لي وَضَعَ جسمي في وضعٍ خطِر لبيقية حياتي | 1 | 2 | 3 | 4 |

TABLE 1. Continued.

| | | | | |
|---|---|---|---|---|
| 7. دائماً الالم يعني أنني آذيت جسمي | 1 | 2 | 3 | 4 |
| 8. مُجرّد وجود شيء زاد من المي لا يعني أنه خطِر | 1 | 2 | 3 | 4 |
| 9. اخشى ان أؤذي نفسي من غير قصد | 1 | 2 | 3 | 4 |
| 10. انه ببساطة لمجرّد ان امتنع عن الحركات غير الضرورية يشكل اكثر شيء يحميني من ان يسوء المي | 1 | 2 | 3 | 4 |
| 11. لن يكون عندي هذا الالم الكبير ما لم يكن هناك شيء من المحتمل انه خطِر يحدث في جسمي | 1 | 2 | 3 | 4 |
| 12. على الرغم من أن حالتي مؤلمة، فإن وضعي سيكون أفضل لو كنتُ نشيطاً جسدياً | 1 | 2 | 3 | 4 |