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Fear avoidance predicts persistent pain in young adults with low back pain: a prospective study

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Abstract

Objectives: To (i) quantify relationships between LBP symptoms, physical activity, and psychosocial characteristics in young adults and (ii) identify sub-classes of young adults with distinct pain trajectories.

Design: Prospective cohort study with 12 months follow-up

Methods: 120 adults (age 20.8±2.6 years, 99 women) participated. Participants completed a baseline survey that measured anxiety, depression, fear avoidance, quality of life, and history and impact of any LBP. Participants completed follow up surveys every 3 months for one year. Sub-classes based on pain trajectories over time were identified using latent class analysis and predictors of class membership at baseline were assessed.

Results: Individuals with LBP at baseline had lower physical quality of life scores than back-healthy participants ($P = 0.01$). Sub-class 1 (25% of individuals with LBP) had persistent moderate/high intensity of pain over the 1-year study period. Sub-class 2 (75%) had significantly improving pain over the 1-year study period. Higher fear avoidance (physical subscale) and pain interference at baseline were associated with greater odds of membership of sub-class 1 (odds ratios 1.2 (95% CI 1.01– 0.1.32) and 1.4, (95% CI 1.15 – 1.64) respectively).

Conclusion: Most young adults with LBP had symptoms that improved over time. Levels of fear avoidance and pain interference may help to identify individuals at risk of persistent pain early in the lifespan.

Keywords

Epidemiology/survey research; Low back/lumbar spine; Pain

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Introduction

Managing low back pain (LBP) **is challenging**. Once individuals have persistent LBP, the effect of any intervention on symptom severity is often small and may be short-lived³⁵. Research has pivoted to identifying individuals at risk of developing persistent symptoms while they are still early in the time-course of their pain. One potential prognostic factor for persistent LBP is a reduction in physical activity and physical fitness,⁴⁶ which may be result of negative pain-related affect¹⁵. Components of negative pain-related affect include fear avoidance, depression and anxiety⁷. The extent to which physical activity and negative pain-related affect predict poor prognosis is difficult to assess, partly due to varying measures of LBP outcome and limited assessment time points in existing research^{4,42,26,32,33}.

The highest incidence of new episodes of LBP is in young adulthood⁴⁴ (age 18 to 35 years⁴³). By the age of 22, up to 45% of young adults have experienced LBP within the previous month^{19,30}. Despite this, there is little research specifically investigating prognostic factors for LBP in young adults²⁵. **In adolescence, physical activity is a predictor of persistent LBP; anxiety and depression are not**³⁷. However, the transition from adolescence to independent adulthood may be characterized by substantial changes in health-related feelings, beliefs, and behaviors. Therefore, the influence of physical activity and negative pain-related affect on symptom persistence in young adults may be different than for adolescents. These factors may then be highly influential in determining the course of back pain across the adult lifespan³⁰.

Individual patterns of episodic symptom recurrence and remission characterize persistent LBP. Complex symptom behavior cannot be adequately understood by longitudinal research that only investigates group averages or defines LBP outcome based on a single timepoint²¹. Recent research has analyzed individual trajectories of symptoms over time to identify previously unobserved or latent sub-classes within heterogeneous middle-aged LBP populations^{12,14,22}. It is unclear if there are similar sub-classes of young adults with distinct symptom trajectories. It is also not known how physical behaviors and psychosocial factors are associated with LBP symptom trajectories in young adults. This information is critical for the development of LBP management strategies that are tailored to the specific characteristics of individuals in young adulthood.

The first aim of this study was to examine relationships between LBP symptoms, physical activity, and psychosocial characteristics in young adults. **We wanted to determine if young adults with LBP had reduced physical activity, impaired physical quality of life, and greater negative pain-related affect compared with back-healthy controls.** The second aim was to identify if there were sub-classes of young adults with distinct pain trajectories over time and to explore baseline prognostic factors for these pain trajectories. **We wanted to determine if fear avoidance and depression would be elevated,** and physical activity would be reduced in individuals who experienced adverse pain trajectories over time.

Methods

Participants

Individuals between the ages of 18-35 were recruited via faculty and student organization contacts at four college campuses. An *a-priori* power analysis suggested that at baseline a sample of 58 individuals with back pain would be needed to identify a difference in fear avoidance between individuals who did and did not experience recurrence of symptoms during one year, with a power of 0.80, effect size of 0.82, alpha value of 0.05, and a response attrition rate over the course of one year of 20%¹⁶. The Chapman University Institutional Review Board approved the study. Participants were not involved in the design of the study, interpretation or translation of the study findings.

Survey Characteristics

Potential participants received an email with an anonymized link to the baseline survey. The baseline survey collected demographic and anthropometric information and contained the following questionnaires: Hospital Anxiety and Depression scale (HADS), the Physical Activity Scale (PAS-24), and the World Health Organization Quality of Life scale (WHOQOL-Bref). The HADS was developed to quantify anxiety (HADS-A) and depression (HADS-D) in populations with physical health problems and has been validated for use in individuals with LBP^{13,40,47}. Scores of greater than 11 on either subscale indicate clinically significant cases^{13,47}. PAS-24 quantifies physical activity in metabolic equivalents (METs) over a 24-hour period based on time spent at each of nine physical activity levels, ranging from sedentary to vigorous. The PAS-24 has been validated in comparison with exercise diaries and the amount of time spent in the most vigorous level of activity (PAS-VIG subscale) is associated with cardiorespiratory fitness measured by maximal oxygen uptake^{1,3}. The WHOQOL-Bref establishes quality of life as it relates to physical health, psychological health, social relationships, and environment (WHOQOL-Phys, WHOQOL-Psy, WHOQOL-Soc, WHOQOL-Env)^{8,39}.

Definition and assessment of low back pain

The approach to characterizing LBP was based upon NIH task force recommendations¹¹. The recommendations characterize LBP by the duration, frequency, and impact of symptoms. Chronic LBP is defined by symptom duration of at least 3 months and symptom frequency of at least half of the days in the previous six months¹¹. A persistent, but less frequent pattern of symptoms may be termed recurrent LBP³⁸.

All participants were asked "Do you have a history of low back pain?". Participants who responded "yes" (lifetime prevalence of LBP) then answered additional survey items about duration, frequency, and impact of their LBP. Participants who reported a history of LBP entered the number of years/months that they had been experiencing ongoing symptoms. They also categorized the frequency of their LBP symptoms over the previous six months on a five-point Likert-type scale. Participants were not asked to identify the exact location of their symptoms. Impact of low back pain over the previous six months was quantified with average and worst intensity of low back pain (visual analogue scales) and four Likert-type items assessing interference of low back pain on day-to-day work and social

activities¹¹(supplementary information). The score for these interference items was summed to produce a total interference score. Fear avoidance was quantified with the Fear Avoidance Beliefs Questionnaire (physical activity and work sub-scales; FABQ-PA, FABQ-W)¹⁸.

All participants who completed the baseline survey received a follow-up survey three months later. This included the same physical activity and psychosocial questionnaires. Participants also identified if they had experienced low back pain in the previous three months. Those who reported LBP were then asked to quantify impact of low back pain over the previous three months with visual analogue scales for average and worst intensity of low back pain and interference of low back pain with functional activities as in the baseline survey. Participants received a follow-up survey every three months, for a total study duration of 12 months. All survey data were collected online through the Qualtrics XM software survey platform (Qualtrics, Seattle, USA).

Statistical Analysis

Variables were screened for univariate and multivariate normality and homogeneity of variance.

Baseline data—Demographic and anthropometric characteristics at baseline were compared between individuals with and without history of LBP using t-tests and chi-square tests. Differences in the PAS-24, PAS-VIG, HADS-A, HADS-D and WHOQOL-Bref (raw domain scores) between individuals with and without LBP were analyzed using **MANCOVA**, with Bonferroni corrected pairwise comparisons. In individuals with LBP, linear relationships between PAS-24, PAS-VIG, HADS-A, HADS-D, WHOQOL-Bref and FABQ and pain characteristics were examined with Pearson's correlation coefficients. IBM® SPSS Statistics® (Version 25, IBM Corporation),

Trajectory data—Individual trajectories of pain over time were identified using the pain intensity reported at each of the five time points. Sub-classes of individuals with similar patterns of symptom trajectory were identified with latent class growth analysis (Mplus Version 8.3, Muthén & Muthén). Only baseline and follow-up data from individuals who reported LBP at baseline were included in this analysis as the study was not designed to investigate factors associated with acute symptom trajectories following a first onset of LBP. A series of latent class growth models were calculated, using a full-information maximum likelihood algorithm for missing data (with an assumption of data missing at random) and no within-class variance. **Missing data assumptions were tested by comparing individuals who did and did not complete the follow-up surveys.** Starting with a one-class model, the effect of adding a class to the model was sequentially tested. For each iteration of the model, goodness of fit criteria were used to determine if the n class model was a significantly better fit of the data than the $n-1$ class model (supplementary information)^{28,29}. Additionally, the number of individuals within a class had to exceed 5% of the sample size²⁷.

Repeated measures ANOVA were then used to evaluate the change in pain intensity over time in each class. **Two binomial logistic regression models were used to explore if baseline physical and psychosocial variables (Model 1) or pain characteristics (Model 2) predicted class membership, and odds ratios were calculated. All physical/**

psychosocial variables that were significantly associated with pain at baseline were included in Model 1.

Results

Baseline data

One hundred and twenty individuals completed the baseline survey. Sixty-three participants reported a history of LBP. Characteristics of individuals with and without LBP at baseline are shown in TABLE 1. Fifty-nine of the individuals who reported a history of LBP had greater than one-year duration of symptoms, with one reporting symptom duration of three-months, and three reporting less than three months. Fifty-eight had experienced ongoing symptoms in the previous six months. Nineteen reported high or very high frequency of symptoms during that time, consistent with chronic LBP, while the rest reported less frequent symptoms, consistent with recurrent LBP (TABLE 1 and supplementary information).

Participants with LBP were older than participants without LBP (TABLE 1). MANCOVA with age as a covariate indicated that there was a difference in physical/psychosocial characteristics between groups at baseline ($F(8, 108) = 2.667$, Wilks' $\lambda = 0.835$, $P = 0.010$). Two outliers were excluded from this analysis due to non-normal distribution of the residuals, but their inclusion or exclusion did not affect the significance of the results. After removal of these outliers, data met the assumptions of normality and homogeneity of variance. Pairwise comparisons (TABLE 1) indicated that participants with LBP reported lower quality of life in the physical domain than those without LBP. There was no difference in physical activity, other quality of life domains, depression, or anxiety between participants with and without LBP (TABLE 1).

The association between psychosocial and pain characteristics are shown in TABLE 2 and FIGURE 1.

Symptom trajectory data

The total number of individuals completing each of the follow-up surveys was: 112 at month 3; 95 at month 6; 84 at month 9; and 79 at month 12 (Supplementary Table 1). Of these, the number of participants from the baseline LBP group was: 59 at month 3, 50 at month 6, 42 at month 9, and 40 at month 12. Eighty-nine individuals completed at least three of the four follow-ups. There was no difference in age, sex, or baseline LBP status between those who did and did not complete at least three of the follow-ups ($P = 0.349$, $P = 0.364$, $P = 0.762$ respectively).

Twenty-six individuals who had no history of LBP at baseline reported first onset of LBP during the follow-up period. Eleven reported pain at one time-point only. MANCOVA with age as a covariate indicated that there was no difference at baseline in physical or psychosocial characteristics between those who reported a first onset of LBP and those that remained back-healthy ($F(7, 48) = 0.280$, Wilks' $\lambda = 0.961$, $P = 0.959$).

Summary data for all individuals reporting pain at each follow-up is shown in Supplementary Table 1.

Latent Class Growth Analysis—Average and worst pain intensity were highly correlated at all time points ($r > 0.726$, $P < 0.001$). As average pain intensity demonstrated stronger associations with baseline psychosocial variables than worst pain intensity, average pain intensity was utilized for the latent class analysis. Both 2 and 3-class models met the fit criteria and provided a better model fit than a 1-class model (supplementary information). The model that identified 2 sub-classes within the participants with LBP was selected as it demonstrated the best goodness of fit criteria overall²⁹.

Individuals in Class 1 ($n = 16$, 25% of the sample) demonstrated persistent pain over time (FIGURE 2a). They had moderate/high average pain at baseline (TABLE 3)²¹ and this did not change significantly over the course of the study (repeated measures ANOVA, $P = 0.394$). Individuals in Class 2 ($n = 47$, 75% of the sample) demonstrated improving pain (FIGURE 2a). At baseline they had a low pain intensity, and this improved significantly over time (repeated measures ANOVA $P < 0.001$). Bonferroni-corrected pairwise comparisons showed significant reduction in pain intensity in Class 2 between baseline and months 9 ($P = 0.002$) and 12 ($P = 0.005$). Average pain intensity was lower in Class 2 than in Class 1 at every time-point ($P < 0.001$ for all comparisons). There was no difference in sex distribution ($p = 0.224$), age ($p = 0.248$) or BMI ($p = 0.582$) between classes.

Logistic regression analysis demonstrated that individuals in the persistent pain class (Class 1) were significantly more likely to have high FABQ-PA scores at baseline (percentage accuracy in classification [PAC] 78.7%; Wald 4.578, $P = 0.032$, Unadjusted odds ratio 1.155, CI 1.012–1.318, FIGURE 2b). Model 2 explored the prediction of trajectory class by baseline pain characteristics. Individuals in the persistent pain class were more likely to have high pain interference scores at baseline (PAC 78.3%, Wald 11.848, $P = 0.001$, unadjusted odds ratio 1.372, CI 1.146 – 1.643, FIGURE 2b).

Discussion

Up to half of young adults experience persistent, recurrent LBP symptoms, and they have impaired physical quality of life compared with back-healthy controls. Although the sample size was relatively small, the study identified two distinct trajectories of LBP symptoms over time in young adults. Young adults who at baseline had higher fear avoidance and reported more interference by pain on their daily lives had greater odds of experiencing severe, persistent symptoms over time.

We found important differences in the cross-sectional relationship between physical activity and LBP in young adults in comparison with other age groups. Impaired levels of physical activity or fitness have been reported in some middle-aged adults with **low** back pain^{36,41}. This was not the case for the young adults with LBP in our study, and was despite the long duration of symptoms reported in the LBP group. The amount of daily physical activity reported by individuals with and without LBP was moderate, and consistent with previous research^{2,5}. Although they maintained the same amount of general and vigorous physical

activity as their back-healthy peers, individuals **in our study** with LBP reported poorer physical quality of life. The extent of the impairment was associated with pain intensity.

At baseline, participants with LBP did not have greater depression and anxiety compared with back-healthy participants. Existing cross-sectional studies have reported higher rates of depression and anxiety in adults¹⁰ and adolescents^{6,34} with LBP. The prevalence of depression in our study was low compared with other LBP cohorts, with scores for all participants falling below the HADS-D threshold for significant clinical depression^{10,12,13}. The lack of group differences, and the generally low levels of depression in our study, may in part be because our cohort was relatively socioeconomically advantaged. Previous work has indicated interactions between socioeconomic status, depression, and persistent pain¹⁰. Although prevalence of depression was low in our study, our participants had higher levels of anxiety than those reported in existing research^{12,26}. Forty-two participants met the criteria for clinically significant anxiety. And despite the lack of group differences between participants with LBP and back-healthy participants at baseline, individuals in the LBP group with the greatest pain intensity and pain interference reported higher levels of depression and anxiety. This suggests that the relationships between pain, disability, and psychological factors previously observed in adults are still present in our younger cohort^{12,26}.

Symptom trajectories were broadly consistent with the recovery and the moderate/fluctuating LBP trajectory patterns in middle-aged adults²¹. Seventy-five percent of individuals had benign and improving pain intensity over time. **Previous research studying** the prevalence of LBP in adolescence and young adulthood with latent class analysis identified a much smaller proportion of their sample as having improving symptoms⁹. This disparity may be due to the previous study modeling class trajectories based on a dichotomous outcome (presence or absence of pain) at three timepoints. In contrast we used a continuous measure of pain intensity across multiple timepoints. It may also be due to greater psychological distress in the sample of the previous study. Our findings suggest that the transition from adolescence to adulthood in many individuals is associated with a gradual resolution of symptoms^{9,25}. This is in contrast with recovery trajectory patterns in older adults that are primarily evident in individuals seeking care for an acute episode of pain²¹.

The smaller sub-class of young adults reported average symptoms that fluctuated around a moderate/high intensity of pain^{12,21}. Once individuals are in their thirties, pain trajectories remain stable over prolonged periods of time^{12,21}. Therefore, young adults in this sub-class may be in the early stage of a life-course of persistent symptoms. However, the severity of symptoms in this class was less than in the most severely affected sub-classes in older cohorts recruited during care-seeking episodes^{12,22}.

Individuals in the sub-class with persistent symptoms had higher baseline fear avoidance and pain interference. FABQ-PA scores were low on average across our entire group with LBP, but in the persistent pain class they exceeded the threshold of 15 considered to indicate problematic fear avoidance in the physical domain¹⁷. Even though membership of the persistent pain class was associated with elevated physical fear avoidance, this was not

accompanied by significant reduction in either overall or vigorous physical activity. This supports earlier findings of limited relationship between pain-related fear and physical activity level⁴⁵. Given that the individuals in the persistent pain sub-class entered the study with greater pain severity than the recovering class, and that intensity of pain and FABQ-PA scores were associated at baseline, our study also confirms the extent to which high pain intensity may be both a contributor to and a result of elevated fear avoidance^{17,23}.

Limitations

Our cohort was homogenous for education level and employment status and was relatively socioeconomically advantaged. Women were over-represented. However, unlike previous research indicating that women are more likely to report severe and chronic pain^{20,24,31} presence of LBP symptoms at baseline and membership of the persistent pain class was not associated with sex. **We used the term “low back pain” as a broad descriptor for symptoms**, and participants were not asked to identify an exact location for their pain or provided with an anatomical definition of low back pain. Our study was not powered to investigate acute pain trajectories following first episodes of pain in previously back-healthy participants. We did not track or control for the influence of any treatment on symptom trajectories in participants with LBP. **As not all of the originally enrolled participants completed the study, we cannot exclude the potential for response bias. However, we did not observe differences in demographic or LBP status between those who completed the study and those who were lost to follow-up.** Future studies with larger, more heterogeneous cohorts are needed to extend the generalizability of our findings.

Conclusion

Three-quarters of young collegiate adults with LBP experience benign and improving symptoms. However, a minority may be in the early stage of a lifetime of persistent pain.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Key Points

Findings:

Young adults with low back pain demonstrate distinct pain trajectories over time. Greater fear avoidance and pain interference at baseline were associated with higher odds of experiencing persistent pain.

Implication:

Evaluating factors such as pain interference and fear avoidance may help identify those young adults at greatest risk of persistent pain.

Caution:

This study was conducted in a small sample of collegiate young adults with low psychological distress. Further prospective research in larger populations with higher levels of psychological distress and disability is warranted.

Survey questions for low back pain

- 1.** Do you have a history of low back pain?
Response format: yes/no
- 2.** How long has low back pain been an ongoing problem for you? Please use the next two slide bars to indicate years and months of low back pain.
Response format: sliders for years/months
- 3.** This question addresses the frequency that you have experienced back pain symptoms over the last 6 months.
 - a.** How often has low back pain been an ongoing problem for you over the past 6 months?
Response format: five-point Likert-type scale anchored from “not at all” to “very much”
- 4.** During the past 6 months, on a scale of 0 to 10 where 0 is no pain and 10 is the worst pain imaginable
 - a.** How would you rate your low back pain on average?
Response format: slider from 0 to 10
 - b.** How would you rate your low back pain at worst?
Response format: slider from 0 to 10
- 5.** During the past 6 months:
 - a.** How much did pain interfere with your day-to-day activity?
 - b.** How much did pain interfere with work around the home?
 - c.** How much did pain interfere with your ability to participate in social activities?
 - d.** How much did pain interfere with your household chores?
Response format for a) to d): five-point Likert type scale anchored from “not at all” to “very much”.

Figure 1.

Association between depression (HADS-D), anxiety (HADS-A), fear avoidance physical domain (FABQ-PA), quality of life physical domain (WHOQOL-Phys) and average pain intensity in participants with a history of LBP at baseline. All linear relationships are significant at $p < 0.05$ (values provided in Table 3).

Figure 2.

a. Pain trajectories over one year for the two latent classes; Class 1 (persistent pain, top) and Class 2 (improving pain, bottom). Individual data trajectories for individuals are shown in gray and the average trajectory for the class is shown in red (Class 1) and blue (Class 2). **b.** Odds ratios for the prediction of class membership from psychosocial variables, and pain characteristics at baseline. * indicates significantly increased odds of being in Class 1 (persistent pain) in individuals with higher FABQ-PAS (top) and higher pain interference score (bottom) at baseline.

Table 1.

Baseline demographic, anthropometric, physical and psychosocial characteristics in participants with and without a history of low back pain (**n = 120**)

Variable	LBP	No LBP	P Value
Sex, n			0.342
Female	50	49	
Male	13	8	
Age, years	21.5 ± 2.9	20.1 ± 1.8	0.001 *
Race, n			0.689
Asian	16	14	
Black or African American	1	1	
Native Hawaiian/Pacific Islander	1	0	
White	38	32	
Unknown/not reported	7	10	
Education, n			0.118
High school or lower	6	14	
Some college	36	30	
Associate degree	1	0	
Bachelor's degree	18	11	
Post-graduate degree	2	2	
Employment, n			0.343
Working now	10	7	
Unemployed	2	0	
Student	49	50	
Unknown/other	2	0	
BMI, kg/m ²	22.78 ± 3.34	22.13 ± 3.20	0.397
PAS-24, METS	51.13 ± 11.97	50.80 ± 13.98	0.408
PAS-VIG, METS	9.49 ± 7.97	10.11 ± 13.35	0.752
HADS-A	8.79 ± 3.88	9.12 ± 3.85	0.660
HADS-D	3.98 ± 2.89	4.35 ± 2.16	0.269
WHOQOL-Phy	26.70 ± 4.50	28.77 ± 3.43	0.010 *
WHOQOL-Psy	21.73 ± 4.94	21.33 ± 4.08	0.454
WHOQOL-Soc	10.86 ± 2.66	10.81 ± 2.27	0.976
WHOQOL-Env	31.71 ± 4.92	30.93 ± 4.05	0.416
Duration of LBP, years	4.3 ± 2.9	n/a	
Symptom frequency, 1-5 scale	3 (2 – 4) [†]	n/a	
Average pain	3.2 ± 1.9	n/a	
Worst pain	5.8 ± 2.5	n/a	
Pain interference, 4-20 scale	8 (5 – 11) [†]	n/a	
FABQ-PA	11.7 ± 6.6	n/a	
FABQ-W	6.3 ± 7.1	n/a	

* significant difference between groups $P < 0.05$.

[†] Median (interquartile range)

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Table 2.

Association between physical and psychosocial characteristics and pain characteristics in participants with a history of LBP at baseline

Variable	Duration of LBP	Average pain	Worst pain	Pain interference
PAS-24, METS				
<i>r</i>	−0.103	−0.110	0.087	0.101
<i>P</i> value	0.435	0.402	0.499	0.430
PAS-VIG, METS				
<i>r</i>	−0.062	−0.214	0.016	−0.119
<i>P</i> value	0.640	0.100	0.904	0.354
HADS-D				
<i>r</i>	0.252	0.363	0.164	0.307
<i>P</i> value	0.055	0.005 *	0.206	0.015 *
HADS-A				
<i>r</i>	0.242	0.318	0.122	0.199
<i>P</i> value	0.062	0.013 *	0.344	0.118
WHOQOL-Phy				
<i>r</i>	−0.228	−0.495	−0.466	−0.594
<i>P</i> value	0.082	0.001 *	0.001 *	0.000 *
WHOQOL-Psy				
<i>r</i>	−0.212	−0.348	−0.209	−0.316
<i>P</i> value	0.104	0.006 *	0.102	0.012 *
WHOQOL-Soc				
<i>r</i>	−0.207	−0.259	−0.184	−0.358
<i>P</i> value	0.112	0.046 *	0.151	0.004 *
WHOQOL-Env				
<i>r</i>	−0.270	−0.275	−0.215	−0.297
<i>P</i> value	0.037 *	0.034 *	0.093	0.018 *
FABQ-PA				
<i>r</i>	0.255	0.386	0.600	0.515
<i>P</i> value	0.049 *	0.002 *	0.000 *	0.001 *
FABQ-W				
<i>r</i>	0.068	0.176	0.093	0.198
<i>P</i> value	0.607	0.180	0.474	0.120

* significant linear relationship $P < 0.05$

Table 3.

Baseline demographic, anthropometric, physical and psychosocial characteristics in participants identified as belonging to Class 1 and Class 2 by the latent class analysis.

Variable	Class 1 (n = 16)	Class 2 (n = 47)
Sex (female, n)	11	39
Age	20.9 ± 1.7	21.7 ± 3.20
BMI kg/m ²	23.18 ± 0.48	22.64 ± 3.18
Average pain	5.25 ± 1.53	2.39 ± 1.38
Pain interference score	12.2 ± 3.6	6.94 ± 3.55
Pain duration (years)	4.3 ± 2.7	4.2 ± 2.9
FABQ-PA	15.50 ± 4.69	10.45 ± 6.67
FABQ-W	7.06 ± 6.44	5.98 ± 7.29
PAS-24, METS	51.90 ± 13.19	50.86 ± 11.66
PAS-VIG, METS	8.70 ± 7.03	9.10 ± 8.33
HADS-A	9.44 ± 4.24	8.57 ± 3.77
HADS-D	4.38 ± 2.39	3.63 ± 2.670
WHOQOL-Phy	24.44 ± 3.99	27.80 ± 4.60
WHOQOL-Psy	20.69 ± 5.5	22.09 ± 4.88
WHOQOL-Soc	10.63 ± 1.96	10.94 ± 2.87
WHOQOL-Env	31.38 ± 4.51	31.83 ± 5.09