Pain, Fear of Pain, and Disability: A Repeated Measures Analysis of a Tertiary Treatment Sample

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Introduction

- Fear-avoidance models of musculoskeletal pain posit individual differences in fear of pain responding along a continuum of confrontation and avoidance (Asmundson et al., 2004; Lethem, Slade, Troup, & Bentley, 1983).
- Individuals who confront their pain are believed more likely to adaptively resume physical and social activities, thus experiencing only minimal psychological or physiological complications.
- Conversely, those who engage in fear-related pain avoidance behaviours are expected to exhibit psychological and physical consequences, increased pain perception, and higher levels of disability.
- It is reasonable to expect that multidisciplinary treatment that results in reduced fear of pain will produce corresponding reductions in pain and disability (de Jong et al., 2005).
- There are few prospective studies that evaluate this hypothesis (Sieben et al., 2005). The purpose of the present study was to measure changes in reported pain intensity, in reported fear of pain, and in objectively measured functional ability over the course of a six week multidisciplinary treatment program.

Method

- Participants were thirty individuals (23% women; *M* age=44.5, *SD*=10.7) enrolled in a government sponsored multi-disciplinary rehabilitation program for injured workers. All were receiving Worker's Compensation benefits for their injuries.
- Participants received treatment consisting of graded activity; individual psychological counselling; and psychoeducation regarding the fear-avoidance model of chronic musculoskeletal pain and the anatomy and physiology of their respective injuries.
- Participants were assessed at intake, three weeks (program midpoint), and six weeks (program conclusion).
- Measures
  - McGill Pain Questionnaire (MPQ: Visual Analogue Scale [VAS]; Melzack, 1975)
  - Pain Anxiety Symptoms Scale–20 (PASS-20; McCracken & Dhingra, 2000)
  - A measure of functional ability (FA); our FA measure was designed by the authors and is specific to the physical demands of the patient's work setting. FA was calculated based on a ratio of participant's measured ability in relation to documented job demands.

Results

- A mixed model ANOVA was conducted with sex as an independent factor, time as the repeated factor, and pain, fear of pain, and functional ability as dependent variables. There were a number of significant linear effects:
  - Increases in reported pain intensity: $F(1,27)=4.81$, $p<.05$, $eta^2=.18$
  - Reductions in fear of pain: $F(1,24)=8.27$, $p<.01$, $eta^2=.35$
  - Improvements in functional ability: $F(1,28)=20.57$, $p<.01$, $eta^2=.74$.
- There were no significant sex differences on measures of pain intensity, $F(1,26)=1.49$, $p=.23$; fear of pain, $F(1,23)=.27$, $p=.61$; or functional ability, $F(1,27)=.01$, $p=.94$.

Table 1. Means and standard deviations

	M	*SD*	*N*
Pain intensity (MPQ-VAS), T1	3.65	2.30	28
Pain intensity (MPQ-VAS), T2	5.05	2.53	28
Pain intensity (MPQ-VAS), T3	5.51	3.85	28
Fear of pain (PASS-20), T1	28.76	17.81	25
Fear of pain (PASS-20), T2	29.80	22.97	25
Fear of pain (PASS-20), T3	20.80	17.27	25
Percent deficit (FA), T1	25.07	24.38	29
Percent deficit (FA), T2	14.17	22.15	29
Percent deficit (FA), T3	7.59	16.12	29

Discussion

- Results indicate that over a six week multidisciplinary treatment program, reported pain intensity increased at both three and six weeks; reported fear of pain increased initially and then decreased sharply; and objectively measured functional ability improved at both three and six week assessment points.
- Improvements in functional ability with concurrent increases in reported pain may seem paradoxical, but this underscores the role of pain-related fear and anxiety in the maintenance of disability.
- Multidisciplinary treatment for reducing pain-related fear and anxiety also reduced pain-avoidance behaviours and disability. Reported increases in pain likely reflect adaptive pain confrontation in the context of graded activity.
- These findings are consistent with previous research that recommends pain-related fear and anxiety be targeted for assessment and treatment to prevent the development of chronic musculoskeletal pain and disability (e.g., Klenerman, et al., 1995).
- Future directions include: dismantling studies to assess the relative efficacy of treatment components; the inclusion of follow-up assessments; the use of additional validated measures; and randomized controlled trials that compare treatments.

Figure 1. Reported pain intensity: MPQ Visual Analogue Scale (VAS)

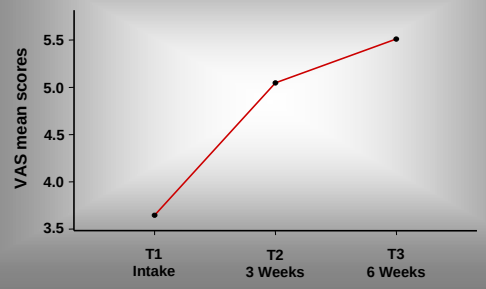


Figure 2. Reported fear of pain: PASS-20

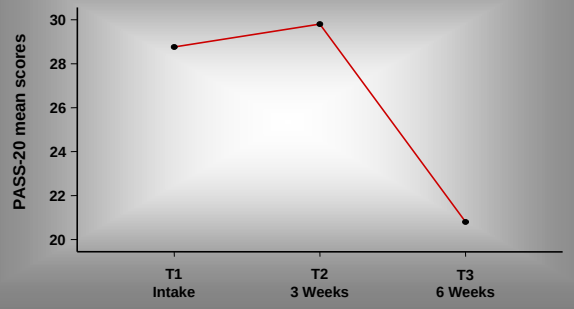
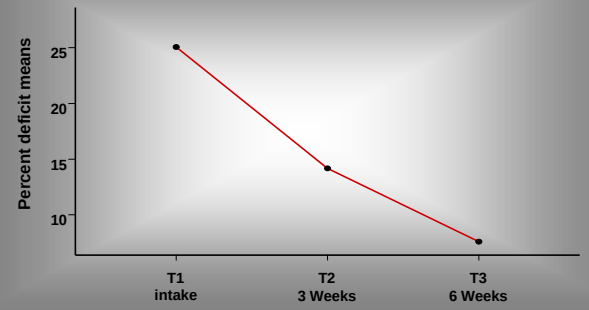


Figure 3. Functional ability: percent deficit



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