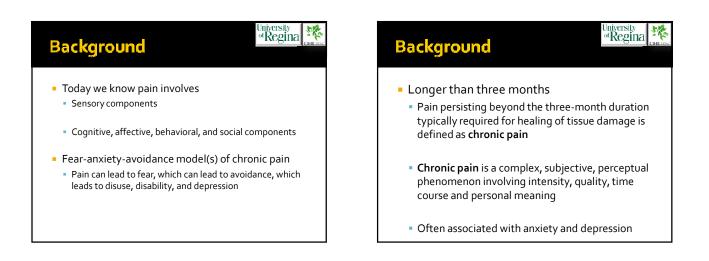
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### Background

- Chronic musculoskeletal pain (CMP) is a pervasive, costly, debilitating global health care concern
   Gatchel, 2004; Sjogren et al., 2009; Strassels, 2006
- Fear-anxiety-avoidance models suggest that for most people pain is unpleasant but not perceived as catastrophic (e.g., predicating permanent disability)
- As healing progresses, adaptive confrontation of pain and pain-related anxiety facilitates graduated increases in activity and reductions in pain

### Background

 For a significant minority, pain is perceived as catastrophic and results in maladaptive avoidance behaviours and promotes disabling CMP

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 7% of the population has experienced disabling CMP in the past 12 months

 McWilliams, Cox, & Enns, 2003

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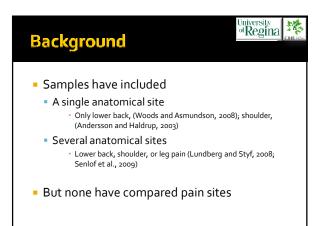
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 Substantial heterogeneity has been identified within samples of patients having disabling CMP

Senlof et al., 2009; Turk and Rudy, 1988

 Differences have been found in coping strategies or comorbid psychopathology

 Asmundson et al., 1997; Hardt et al., 2000; McCracken et al., 1999; McWilliams et al., 2003



### Patients with chronic lower back pain (CLBP) may differ from those with chronic upper or lower extremity pain (ULEP) in presentation, recovery trajectory, and pain-related anxiety Currently there is a paucity of even indirect comparisons of anatomical

pain site groups • Wijnhoven et al., 2006

### Purpose

 Assess for systematic differences between CLBP and ULEP patients participating in a sixweek multidisciplinary reconditioning (i.e., graded exposure) third-party-payer program

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### Hypotheses

- Reductions for both groups in pain-related anxiety, catastrophizing, fear of (re)injury, depression, perceived disability, and functional deficit, but not necessarily reductions in reported pain severity
- The CLBP group would report relatively higher levels of pain-related anxiety, catastrophizing, fear of (re)injury, and depression
- The CLBP group would report greater perceived disability and demonstrate higher levels of functional deficit

### Participants

- Participants were 51 patients who had been injured in workplace accidents

   31% women; ages 24 to 60 years, M age=43.9, SD=9.7
- Enrolled in a six-week third-party sponsored multi-disciplinary reconditioning program

### **Participants**

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- 78% employed prior to their injury
- M=42.9 (SD=10.5) hours per week
- *M*=\$16.19 per hour (*SD*=6.31)
- Reported job stress M=49/100 (SD=26)
- Reported job satisfaction M=76/100 (SD=25)
- No significant demographic differences (all ps>.05) between men and women



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- Half of the patients lower back as their primary pain location (CLBP; n=23; 35% women)
- The other half reported an extremity (e.g., arm, shoulder, leg, knee) as their primary pain location (ULEP; n=28; 29% women).

### Measures

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- Patients were assessed at intake, three weeks, and six weeks (program completion)
- Assessment included several self-report questionnaires and an objective measure of functional capacity

## Anxiety Sensitivity Index Assist Peterson and Reiss, 1992 Pain Anxiety Symptoms Scale-20 PASS-20, McCracken and Dhingra, 2002 Pain Catastrophizing Scale PCS; Sulfivan et al., 2005 Illness/Injury Sensitivity Index-Revised ISR-Garleton et al., 2006 Center for Epidemiologic Studies-Depression Scale CES-D; Radloff, 1977 The Visual Analogue Scale VAS; Melzack and Perry, 1975 Index of Perceived Disability IPO; Author Measure Functional Ability Percent Deficit FAPD; Author Measure

### Measures

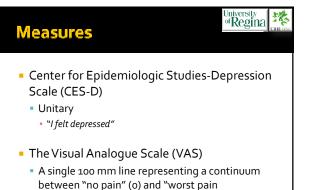
- Anxiety Sensitivity Index-3 (ASI-3)
  - Three factorially distinct components
  - 1) Fear of somatic sensations; 'somatic'
  - "It scares me when my heart beats rapidly."
    2) Fear of cognitive dyscontrol; 'cognitive'
  - "When I cannot keep my mind on a task, I worry that I may be going crazy."
  - 3) Fear of socially observable anxiety reactions; 'social'
  - "It is important to me not to appear nervous."

# Measures Pain Anxiety Symptoms Scale-20 (PASS-20) Four factorially distinct components 1) Cognitive anxiety "Can't think straight when in pain" 2) Pain-related fear "Pain sensations are terrifying" 3) Escape and avoidance "I try to avoid activities that cause pain" 4) Physiological anxiety "Pain makes me nauseous"

### Measures

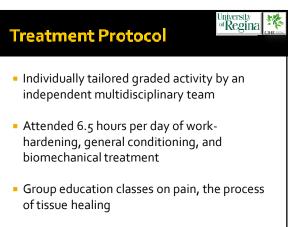
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- Pain Catastrophizing Scale (PCS)
  - Unitary
  - "I worry all the time about whether the pain will end"
- Illness/Injury Sensitivity Index-Revised (ISI-R)
  - Two factorially distinct components
    - 1) Fear of Illness
      - "I get scared if I think I am coming down with an illness."
    - 2) Fear of Injury
    - "I am frightened of being injured."



imaginable" (100)

Measures
 Index of Perceived Disability (IPD)
 Each patient completed a site-specific measure of perceived disability and the scores were then standardized
 Grooming your hair; getting into or out of the bath; squatting
 Functional Ability Percent Deficit (FAPD)
 FAPD = Current demonstrated capacity Pre-injury work setting physical demands



### Treatment Protocol

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- One hour per week of supportive psychological counselling from the team psychologist
- No cognitive behavioural treatment to reduce pain-related anxiety or fear
- One hour of relaxation-based pain management techniques along with psychoeducation that "hurt" does not necessarily equal "harm"

### Analyses

 Correlations between the dependent variables and demographics

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- Independent t-tests and chi-square analyses compared the two pain groups (CLBP vs. ULEP)
- A repeated measures analysis of variance (ANOVA) was used to assess longitudinal changes from intake, to three weeks, to six weeks and compare the two pain groups

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### Results: Correlations

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### At intake

- Work stress and PASS cognitive (r=.52; p<.05)</li>
  Work stress and PASS fear (r=.46; p<.05)</li>
- Work stress and PASS fear (r=.46; p<.05)</li>
   Work stress and PASS physiological (r=.59; p<.05)</li>
- Work stress and ASI somatic (r=.50; p<.05)</li>
- At three weeks
- Work stress and PASS physiological (r=.45; p<.05)</li>
- At six weeks
  - Work stress and PASS cognitive (r=.49; p<.05)</li>
  - Work stress and ISI-R injury (r=.47; p<.05)
  - Work stress and PCS (r=.46; p<.05)
  - Work stress and hours of work per week (r=.41; p<.05)</li>

### Results: Correlations

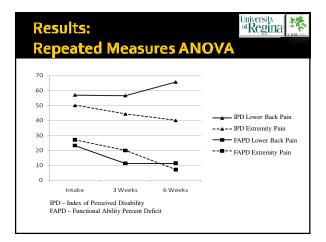
- None of the correlations between the FAPD and both the IPD and the VAS were significant (all rs<.10; all ps>.10)
- None of the correlations between pain duration and any of the dependent variables were significant for patients in either the CLBP or ULEP groups (all rs<.10; all ps>.10)

### Results: Comparisons

- There were no noted systematic differences in program attendance or adherence based on demographic variables or pain location
- No significant differences between groups (CLBP vs. ULEP) on any of the demographic measures or on sex
   χ<sup>2</sup>(1)=.24, p >.10, phi=.07
- No significant differences between groups and postprogram outcomes (returned to work, returned to modified work, or did not return to work)
  - χ<sup>2</sup>(2)=.98, p >.10, phi=.14

### Results: Repeated Measures ANOVA Significant linear effects were found for most measures, including an improvement in functional capacity for both groups VAS scores (i.e., reported pain intensity) actually *increased* over the course of the program for both groups Relative to ULEP, CLBP reported lower pain-related fear, fear of physiological reactions, fear of injury and illness, and pain catastrophizing over the course of the program Most of the interaction effects were not significant; except a between-group interaction (p<.01) on perceived disability</li>

	ults:		~					gina 革	
Repeated Meas			sons across		6 Weeks				
	Extremity Lower Back			Extremity	Lower Back		Extremity	Lower Back	
	Pain	Pain	$r^2$	Pain	Pain	$r^2$	Pain	Pain	$r^2$
PASS- Cognitive†	11.29(6.61)	7.43 (5.66)	.09	10.00(6.22)	8.83 (8.12)	-	8.82 (5.70)	5.70 (4.79)	.00
PASS- Esc/Avoid†	11.50 (5.90)	7.09 (5.23)*	.14	9.25 (5.71)	8.74 (8.55)	-	8.14 (5.63)	4.78 (4.65)	.1
PASS-Fear	7.36 (5.46)	3.00 (3.92)*	.19	6.36(6.22)	3.43 (5.03)	.06	5.43 (6.17)	2.26 (2.80)	.1
PASS- Physiology	7.00 (6.10)	3.39 (3.13)*	.15	6.86(6.29)	3.87 (3.77)	.09	5.89(6.08)	2.87 (3.68)	.0
ASI-Somatic	9.14 (8.04)	5.17 (4.20)	.11	8.89 (7.21)	5.65 (7.67)	.05	8.68(7.37)	3.13 (3.44)*	.2
ASI-Cognitive	2.29 (2.81)	1.52(2.15)	.02	2.86(2.98)	1.87 (2.58)	.03	2.39(2.69)	1.00 (1.60)	.1
ASI-Social <sup>†</sup>	6.29 (3.60)	5.78 (2.88)		6.32 (3.16)	5.96 (2.90)	-	5.50(2.56)	4.74 (2.99)	.0
SI-R-Injury	6.64 (4.48)	3.52 (3.64)*	.13	7.50(7.91)	3.91 (3.70)	.08	5.86 (4.49)	2.39 (2.37)*	.2
SI-R-Illness	6.18 (5.62)	2.65 (2.59)*	.18	6.71 (6.25)	4.30 (7.67)	.03	5.96 (5.43)	1.91 (2.11)*	.2
PCS	17.89 (12.59)	9.87 (8.92)*	.13	14.79 (14.79)	10.83 (9.98)	.02	14.75 (12.87)	5.83 (5.08)*	.2
CES-D†	16.82 (10.36)	12.30(7.09)	.06	18.86(9.84)	14.39 (8.09)	.06	14.37 (9.39)	12.17 (6.26)	.0
/AS‡	41.20 (23.90)	31.30 (24.70)	.04	46.10 (25.80)	45.90 (26.70)	-	50.40 (39.40)	49.00 (34.90)	
APD†	27.14 (25.29)	23.19(27.31)		20.00(23.10)	11.22(19.62)	.04	7.18(15.08)	11.70 (19.90)	.0
PD†	50.00(14.23)	56,47 (17,56)	.04	43.70 (14.75)	56.88 (20.31)*	.13	39.69(17.27)	64.64 (19.26)*	.3

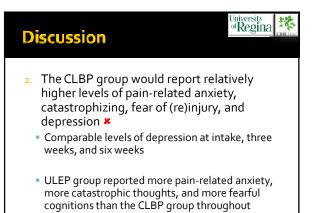


### Discussion

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- - Reductions in pain-related anxiety, catastrophizing, depression, and functional deficit across both groups
  - Increase in reported pain severity across both groups
  - No reductions in anxiety sensitivity or fear of (re)injury
  - Reduction in perceived disability for ULEP, but not CLBP



### Discussion 3. The CLBP group would report greater perceived disability ✓ and demonstrate higher levels of functional deficit × Comparable levels of pain, perceived disability, and functional deficit at intake Comparable on levels of pain and functional deficit at three and six weeks

 No significant correlations between functional deficit, perceived levels of disability, and/or pain

### Discussion . The CLBP group would report greater perceived disability ✓ and demonstrate higher levels of functional deficit ★

### Summary

- CLBP and ULEP reported *reductions* in fearanxiety-avoidance variables
- CLBP demonstrated *reduced* disability but paradoxically reported an *increase* in reported perceived disability and *no change* in painrelated and somatic fear
- ULEP demonstrated *reduced* disability, *reduced* perceived disability, and *reduced* pain-related and somatic fear

### Implications

- CLBP may be qualitatively distinct from extremity pain
- Psychological interventions targeting catastrophizing and pain-related anxiety may improve the effectiveness of interventions for ULEP patients; however...

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 CLBP patients may require even more comprehensive or individually tailored multidisciplinary interventions

### Limitations & Future Directions

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- No follow-up data and no measure of how the perceived disability impacted the patient
- No comparisons between upper and lower extremities
- Small sample size
- Patients receiving compensation

