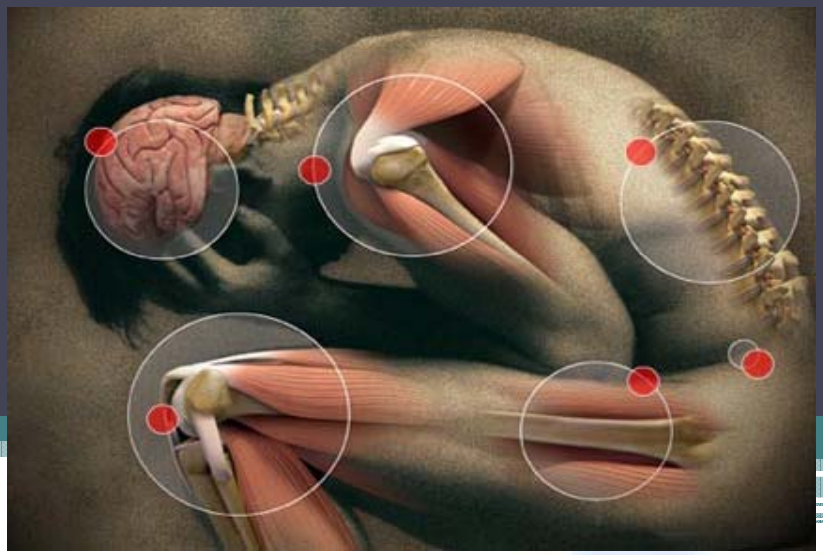
Biopsychosocial factors influencing physical activity participation among people with chronic pain



Jennifer Hulburt, B.S. Exercise Science
MSc. Kinesiology (candidate)

Memorial University of Newfoundland
Department of Human Kinetics and Recreation

March 15, 2011

Acknowledgements

- Thesis Committee
  - Angela Loucks-Atkinson, PhD
  - LeAnne Petherick, PhD
  - Sandra LeFort, PhD, MN, RN

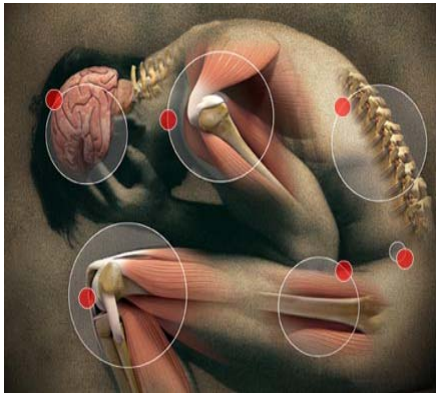
- NLCAHR-HARP Master's Award

Outline of Presentation

- Introduction to the Research Issue: Chronic Pain and Physical Activity Participation
- Review of the Literature
- Methodology
- Results
- Future Analyses and Discussion

Introduction: Chronic Pain

- Pain
  - “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (Merksey, 1994).
- Chronic Pain
  - Ongoing or intermittent pain which has persisted for at least 6 months.



Stats Canada 2008

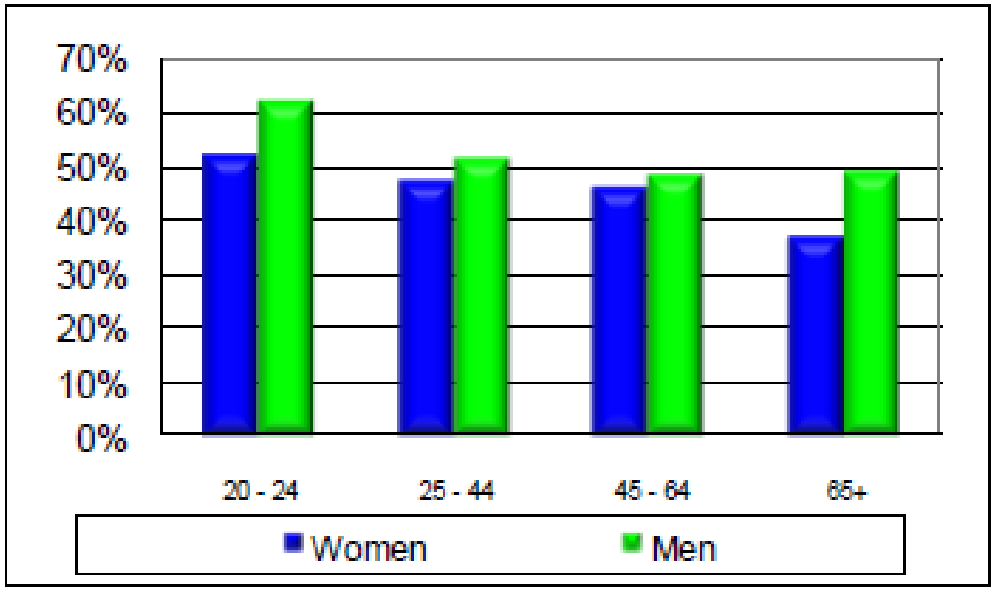
The Impact of Chronic Pain: Older Adults

27%

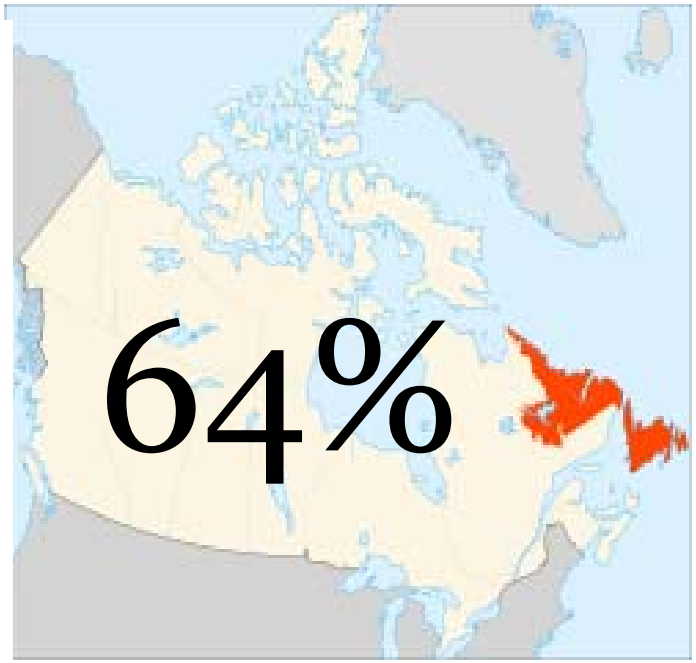
16%

Physical Activity Levels Decrease with Age

Leisure-time physical activity (% at least moderately active), Canadians 20+ years, by sex and age group



Canadian Community Health Survey 2007/8, Statistics Canada

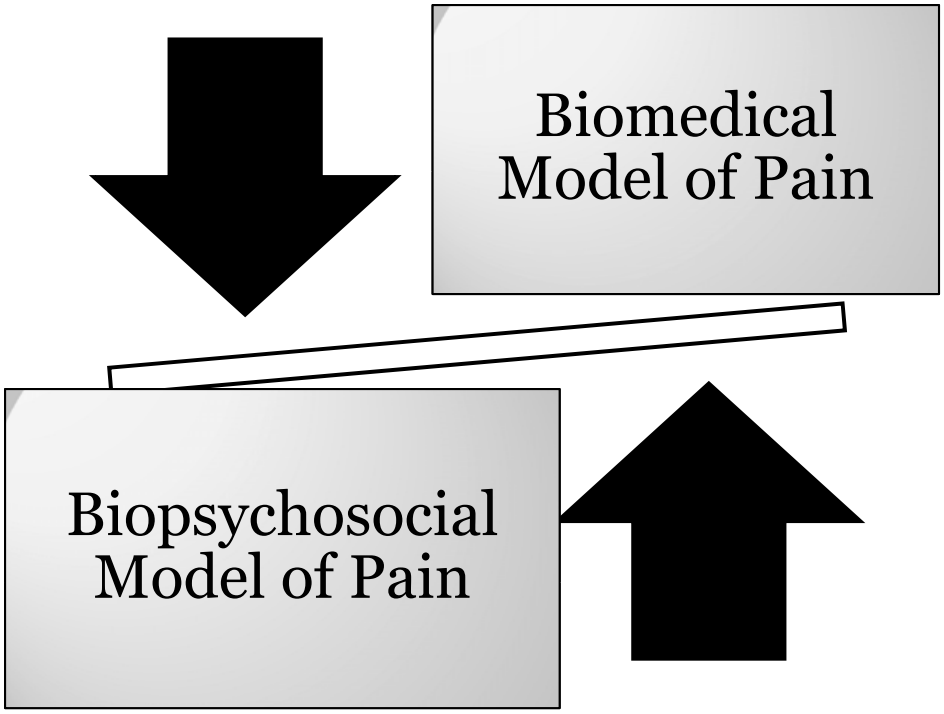


Physical Activity Limitations and Chronic Pain

- Chronic pain may interfere with physical activity, particularly among older adults (Sawatsky, R. et al., 2007)
- 53% of those with severe pain report that pain interfered with most activities (Ramage-Morin 2008)

Literature Review

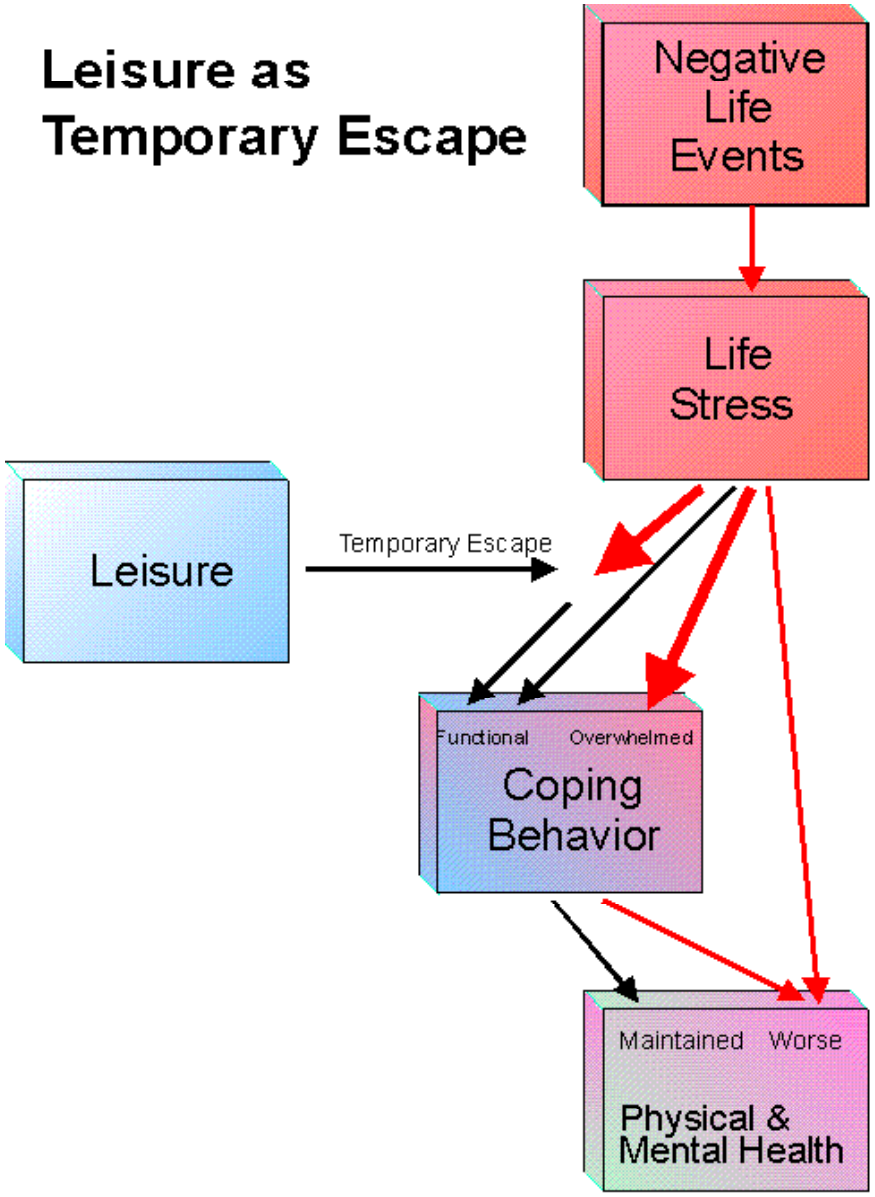
What factors influence physical activity participation among people with chronic pain?



The Biopsychosocial Model of Chronic Pain

The Biopsychosocial Model of Pain

Leisure as Temporary Escape



Coleman and Iso-Ahola 1993

How can people with chronic pain overcome the barriers to exercise?

Self-efficacy

- *an individual's beliefs that he or she will be able to successfully perform the behaviour required to produce desired outcomes (Bandura 1977).*

- Higher exercise self-efficacy is associated with higher levels of exercise participation and satisfaction with physical function (Medina-Mirapeix, Escolar-Reina et al. 2009; McAuley, Courneya et al. 1994; Rekeski, King, et al. 2008).

- People with more pain sites have lower exercise self-efficacy (Leveille 2003).

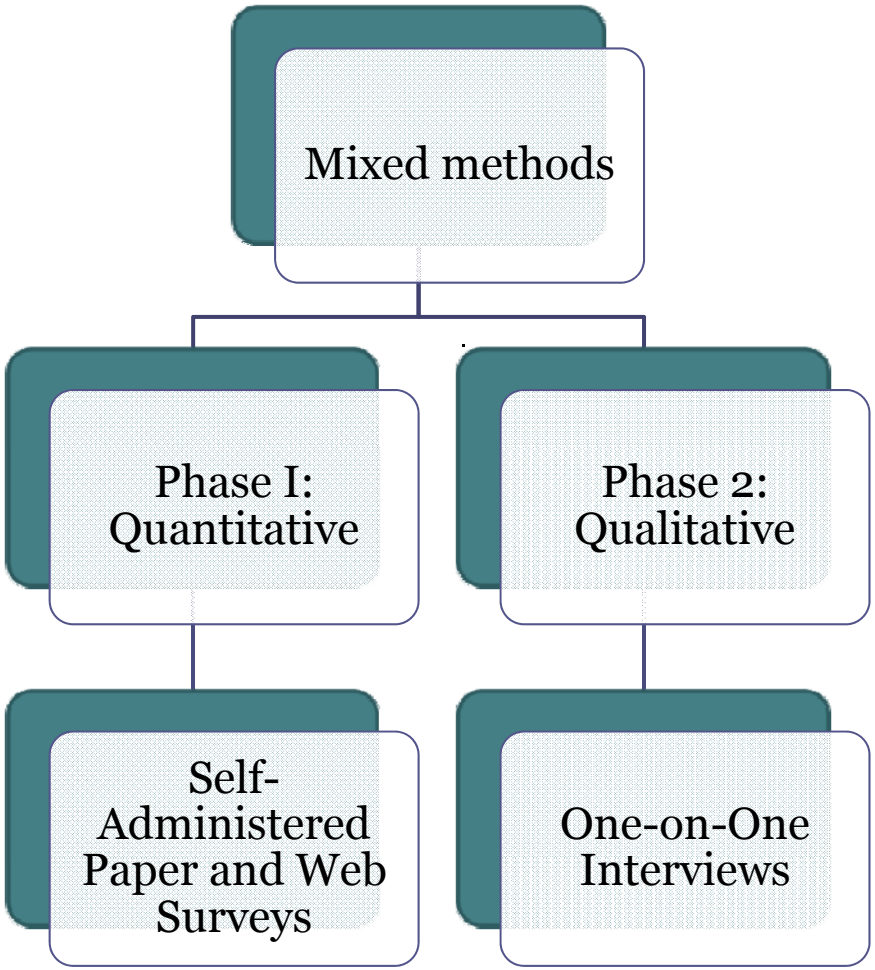
Objectives:

1. To explain the associations between pain, physical activity participation, exercise self-efficacy, and stress.
2. To explore individuals' beliefs about physical activity and pain.

Research Questions

1. What are the associations between stress, pain, physical activity participation, and exercise self-efficacy?
2. Does physical activity participation mediate the relation between stress and pain?
3. What are the differences between older adults (50 years and older), and younger adults (under 50 years) in terms of these associations?
4. What are the differences between more active and less active participants in terms of the study variables?

Methodology



Phase I: Quantitative

- Sampling and Recruitment
  - Purposeful sampling of adults (age 19+) with CP living in Atlantic provinces (NL, NB, PEI, NS).

  - 42% snowball sampling
  - 14% Arthritis Society
  - 10% Community events
  - 10% Posters in physician's offices

Phase I: Quantitative Results

Sample	%	N
Survey Response	21%	99/480
Paper Web		91 8
Rural* Urban*		22 43

*34 Missing Data

Socio-demographics	%	N	SD
Gender	71% female		
Age		57.6	15.43
Marital Status	59% married or common-law living in same residence		
Income	35% annual household income of $60,000 or more		
Education	65% had attained a certificate or diploma from a trade school, or a college or university graduate degree		
Employment	53% retired		

Descriptive Results

Chronic Pain	57% Arthritis
	52% chronic low back pain
	25% Fibromyalgia
	Pain severity: Mean = 4.8 (*SD* =2.12)
	Pain interference: Mean= 4.8 (*SD* = 2.63)

Descriptive Results

Physical Activity	Work PA + Leisure PA + Sport PA = Total PA	Range: 2.6 - 7.6 Mean: 5.4 (SD =1.09)

Descriptive Results

Stress

72% score 20 or lower

Mean = 16.56

(SD = 7.31)

Descriptive Results

Exercise Self-Efficacy	Confidence in continued exercise participation at least 3 times per week for at least 30 minutes at moderate intensity over incremental week periods for 8 weeks.
	Mean = 56.8% (*SD* = 37.53)

Bivariate Correlation Analyses

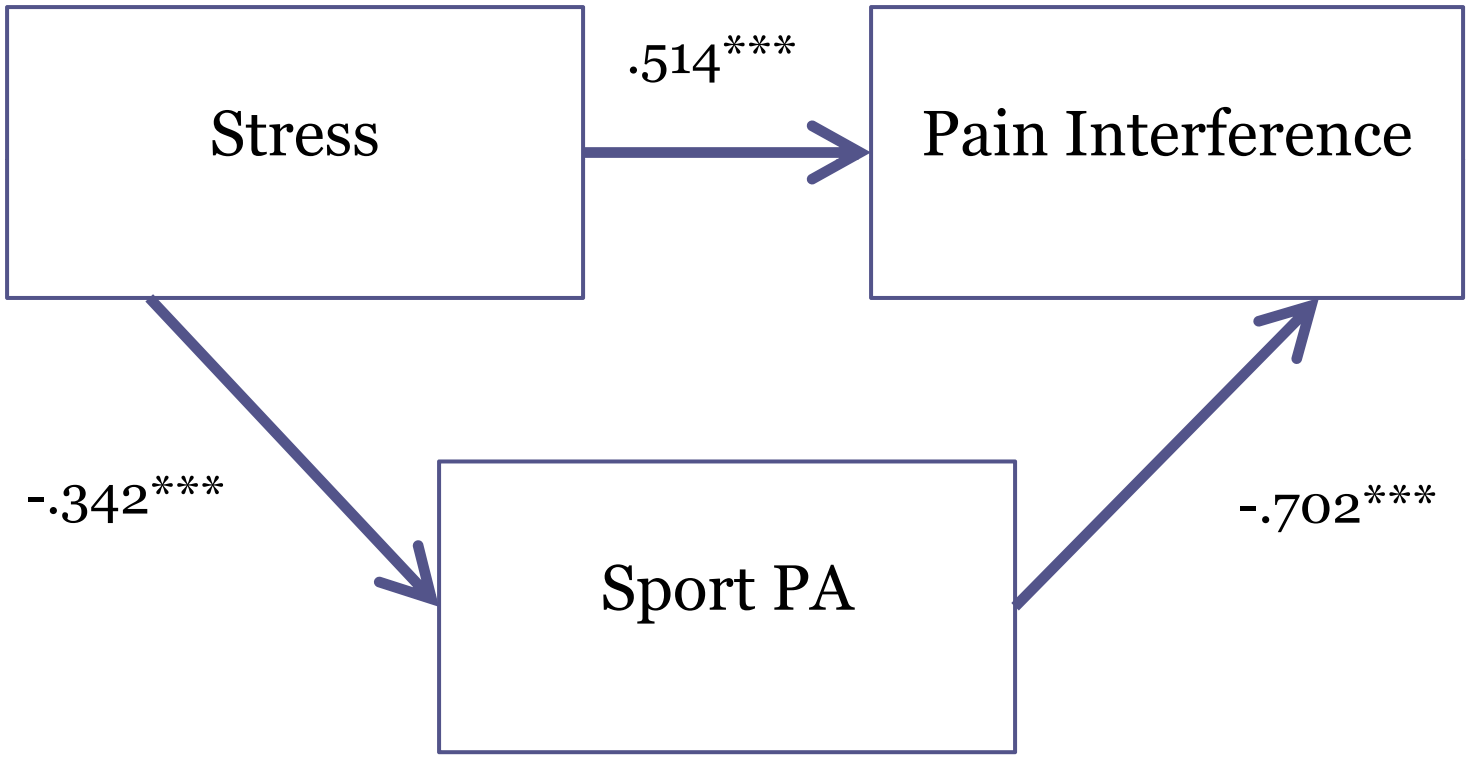
	1	2	3	4	5	6
1. Age		.202*	-.061	-.129	-.049	-.265**
2. Total PA			-.360**	-.285**	.389**	-.086
3. Pain Severity				.598**	-.360**	.261**
4. Pain Interference					-.504**	.514**
5. Exercise self-efficacy						-.140
6. Stress						

*p<.05, **p<.01

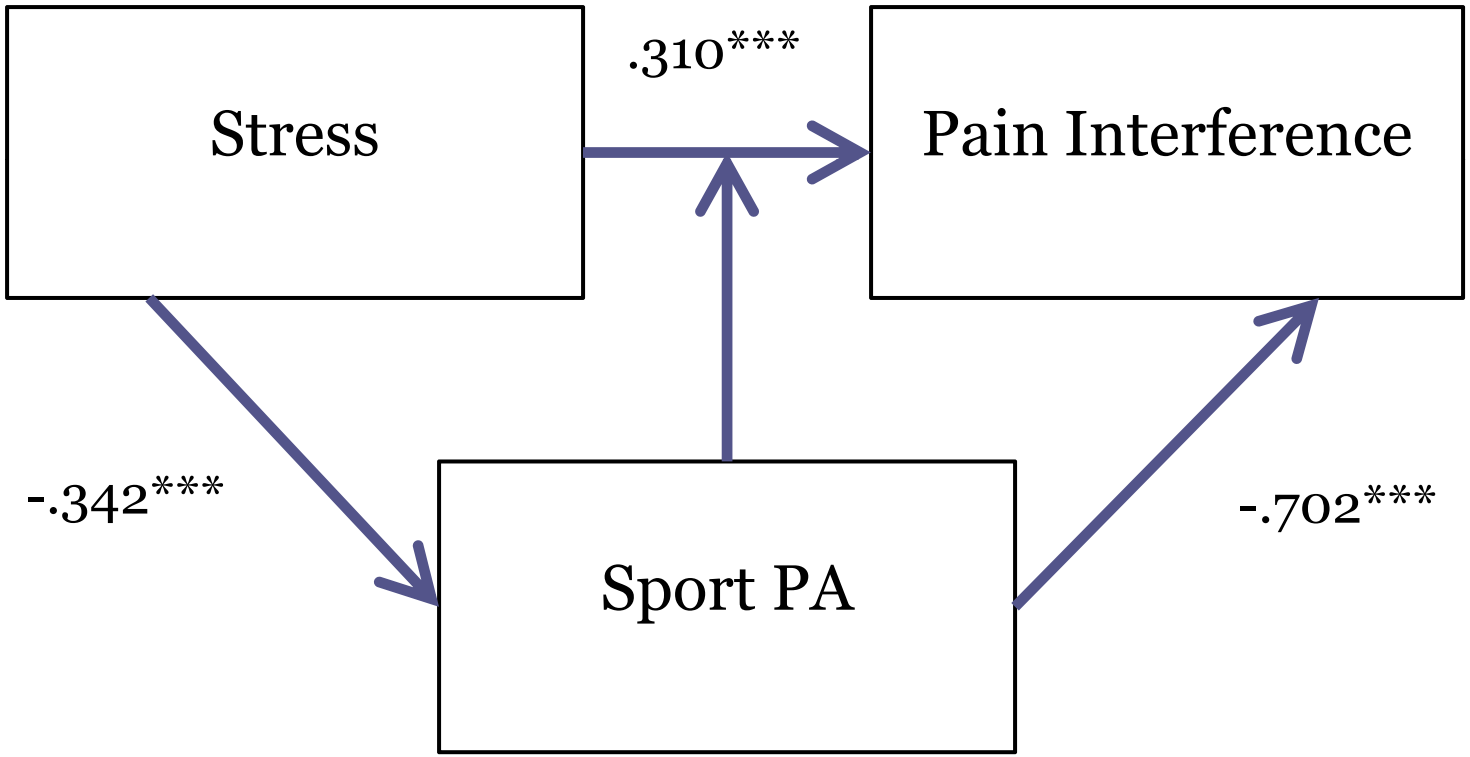
Regression Analyses

- Sport PA
  - Stress (β = -.356, $p \leq .001$)
  - Pain severity (β = -.416, $p \leq .001$)
  - Pain interference (β = -.681, $p \leq .001$)
  + Exercise self-efficacy (β = .584, $p \leq .001$)

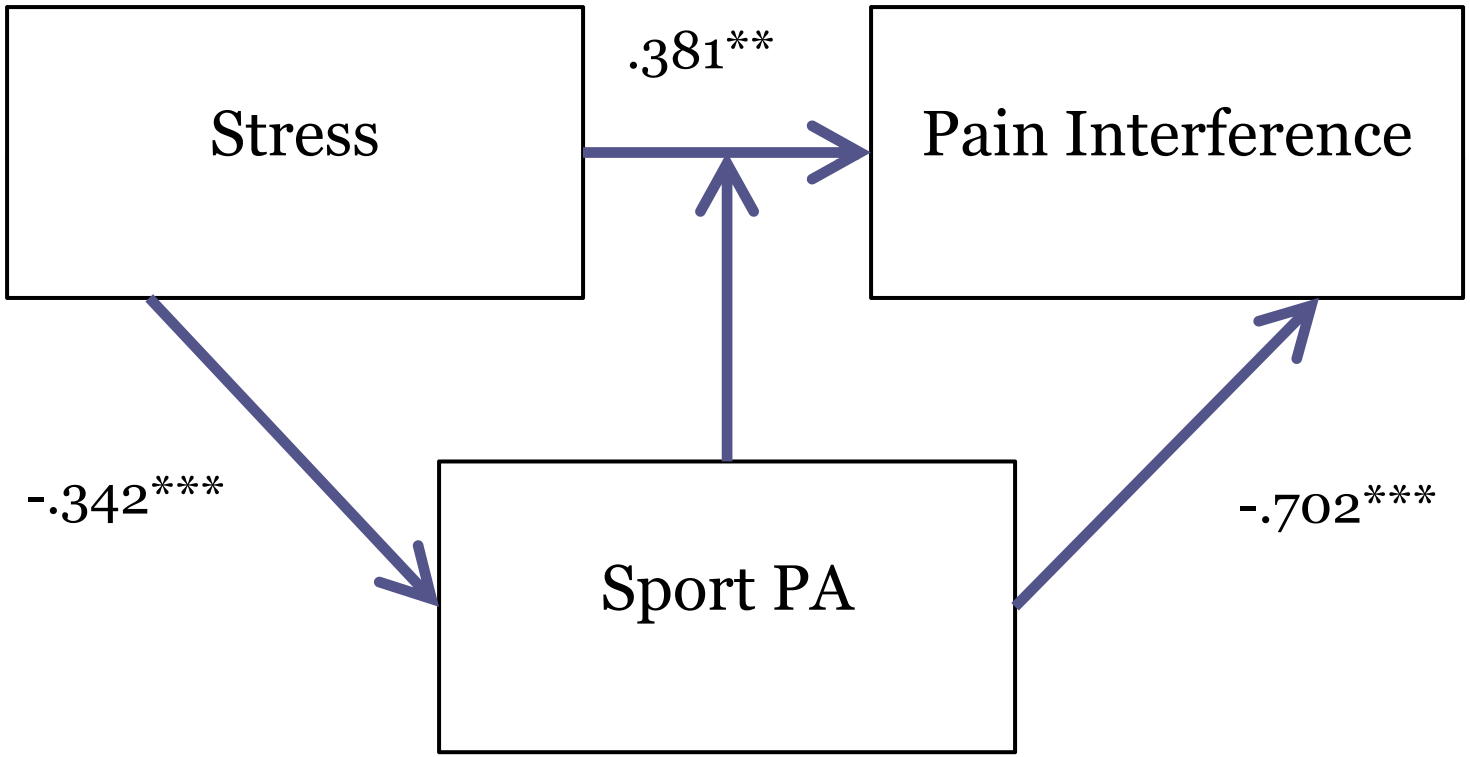
Mediation Analysis



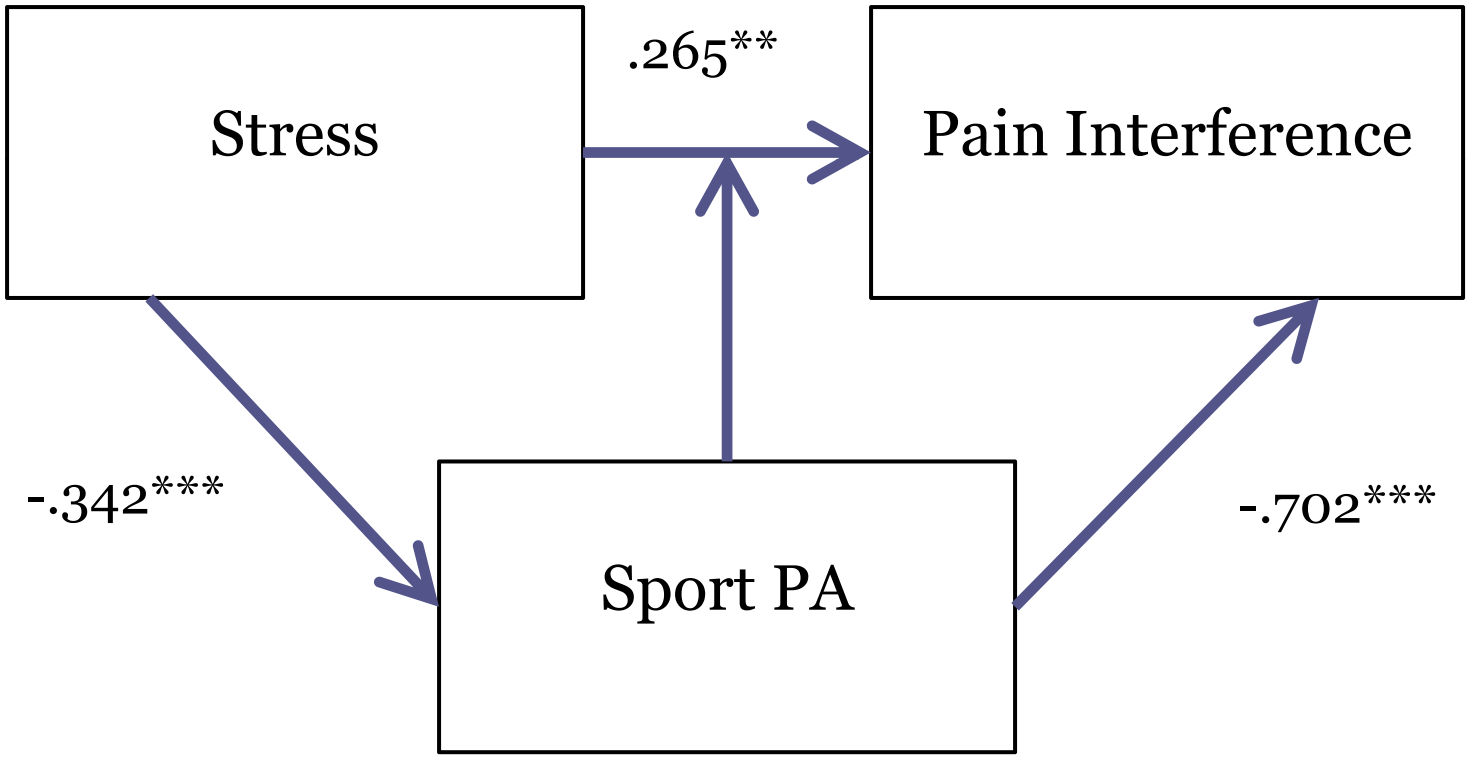
Mediation Analysis



Mediation Analysis – Participants Under Age 50



Mediation Analysis – Participants 50+



Phase II: Qualitative

1. What influences physical activity participation among people with CP?
2. What is the meaning of physical activity to people with CP?
3. Why are some people with CP more active while others are less active?

- In-depth semi-structured interviews, ~ 1 hr
- Participants (N= 6)
  - Age 50+
  - 3 rural; 3 urban
  - Extreme cases

- Content analysis

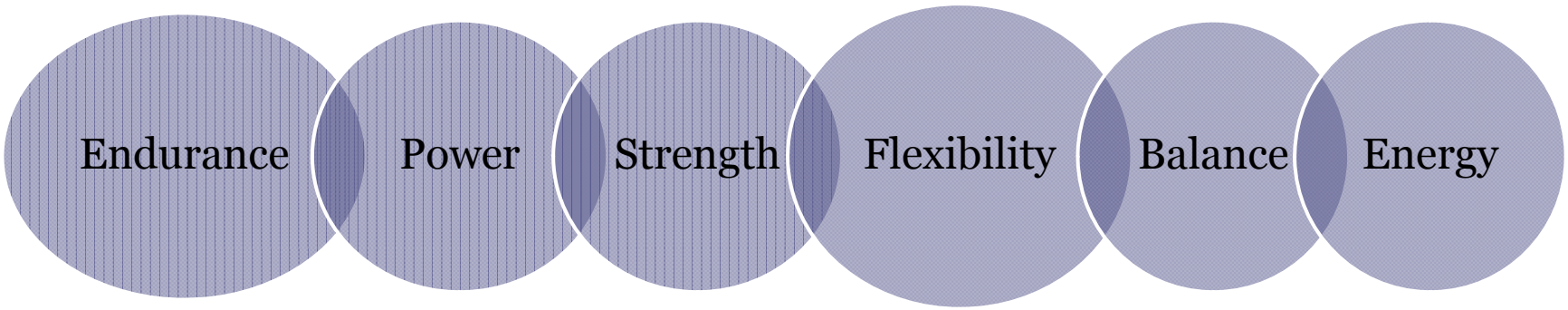
Introduction

- Kinesis = self-induced movement

Self-kinesis

An individual's self-chosen movement, influenced through the interactive energy of biopsychosocial factors

Self-Kinesis



Endurance

Purpose through routine movement

If I stopped from my pain I wouldn't do what I want to do in life. You know I want to do whatever I can. I mean I'm not gonna give up – that'd be pretty stupid… I do all that because I have a purpose. There's purpose…I get up, I get dressed, there's a purpose. That's how I look at it. (Mary)

Power

Control of the mind

You have to change the focus. So whether that's getting up from your chair, whether that's getting a cup of tea, whether it's changing the station, whether it's recognizing the fact that you may need to turn your body in a different direction. Whatever it is, you need to do something. (Dee)

Strength

Influence of others

"If you have 100 pounds of flour to carry, it makes it easier to have someone help you carry it doesn't it? A burden shared is the same as sharing a heavy weight." (Lucy)

Flexibility

Adaptability to change

"I work through the pain…let's say my hip is really bad one day. I go to the gym and the instructor says, 'we're gonna do 87 squats'. I'm gonna say, 'well you know I prefer to go out and walk the track', which is easier for me, easier on the joint, still exercising. It's always a matter of choices…you have to know your limitations, but you also have to know your capabilities. " (Dee)

Balance

Listening to and ignoring the body

"You know your body will always react to stresses.. your body will tell you – you need to make changes but we're not really good at listening to it." (Dee)

Energy

A blockage called pain

I find with Fibromyalgia – I don't know if everyone finds the same thing, but I find it moves – it's moving from one part of your body to another continually (Lucy).

Like in myself, there's a battle every day, to live, to cope with everything when you've got so much stuff in your body going on. (Joy)

Discussion of Findings

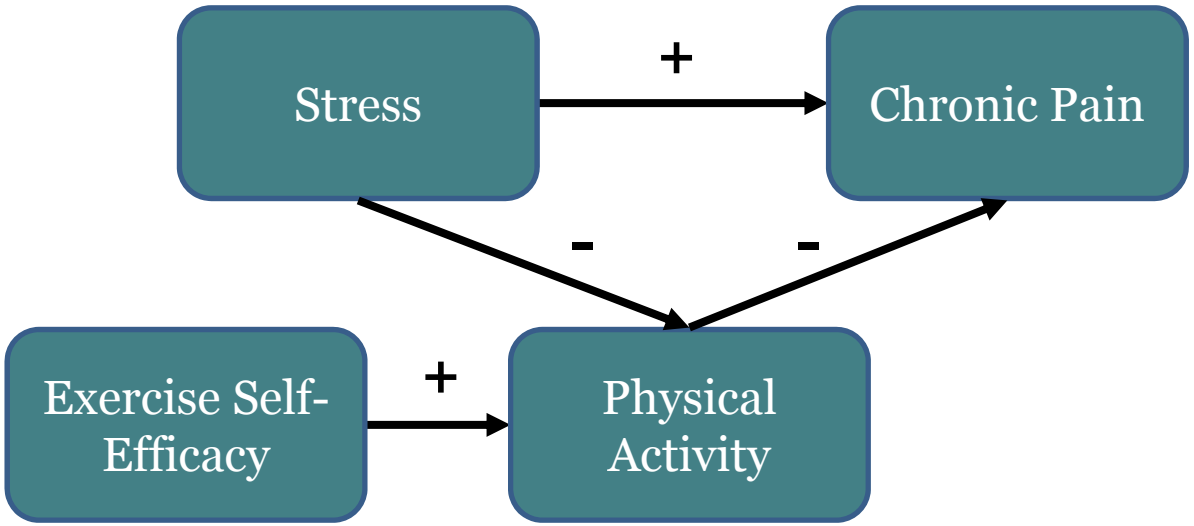
- Total PA increases with age – Leisure PA did not.
  - Subculture of work physical activity in NL (Witcher et al., 2007).
- More active versus less active participants reported less pain interference.
- Sport PA moderates the relation between stress and pain interference.

Pain Interference

- Distraction (power)
- Adaptability (flexibility)
- Influence of others (strength)

Future Analysis

- Path Analysis
  - To examine hypothesized models of associations between stress, pain, PA, and exercise self-efficacy



Questions?

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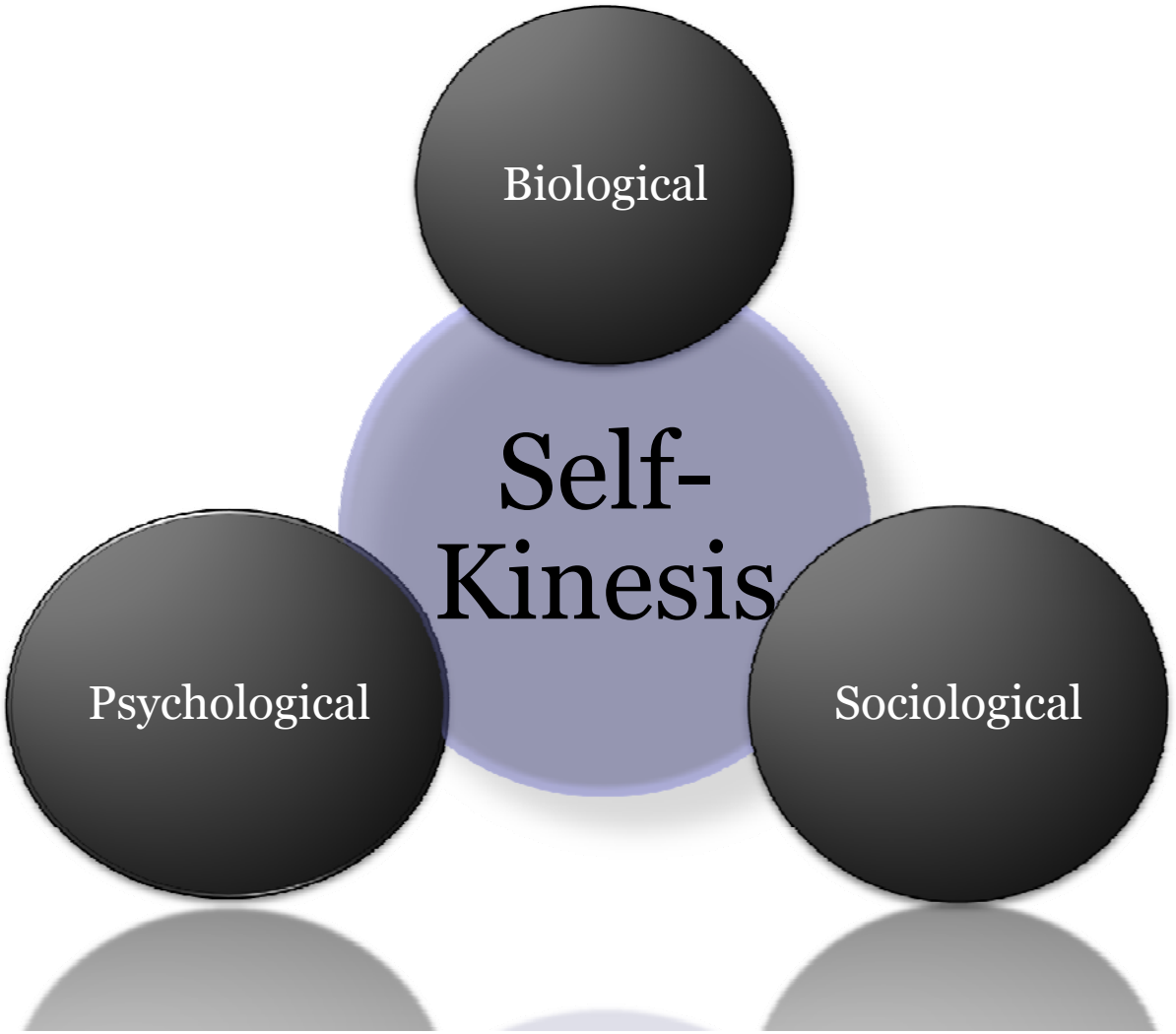
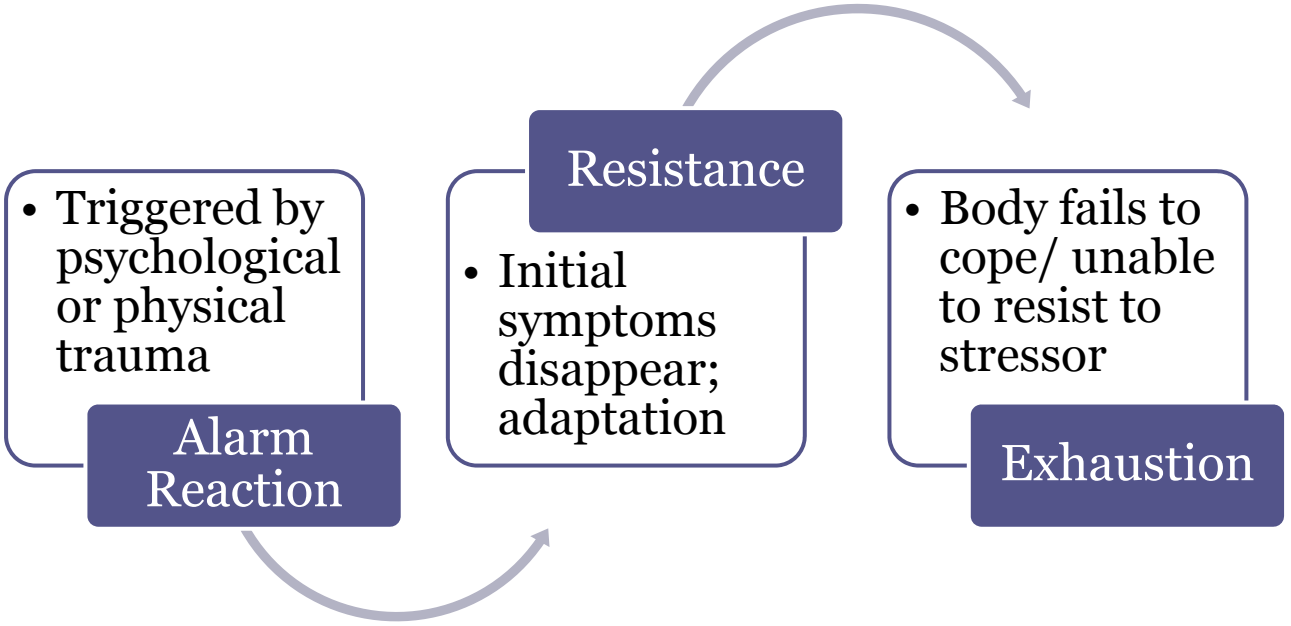
Themes



How do we respond to stress?

- General Adaptation Syndrome (Seyle, 1956)



Which of the following have you been diagnosed with?

- Arthritis
- AIDS
- Cancer
- Chronic fatigue syndrome
- Chronic neck/shoulder pain
- Chronic low back pain
- Chronic pelvic pain
- Irritable bowel syndrome
- Fibromyalgia
- Motor vehicle accident related pain
- Never injury pain
- Phantom limb pain
- Peripheral neuralgia
- Post surgical pain
- Raynaud's disease
- Spinal cord injury
- Sport-related injury
- Work-related injury
- Other
- Don't Know

Do you have chronic pain?

Are you able to participate as you like in physical activities?

What things in life seem to influence your pain?

PARTICIPANTS NEEDED FOR CHRONIC PAIN RESEARCH

I am looking for volunteers and invite you to complete a survey aimed at understanding your pain and beliefs about physical activity. Please ask the receptionist for a survey if you are willing to help, or you can complete the survey online at www.surveymonkey.com

If you have questions, please contact Jen Hulburt at 737-3138
jenhulburt@gmail.com
Memorial University of Newfoundland, Department of Human Kinetics and Recreation


Questions?

Regression Analyses

Table 13: Hierarchical regression analysis of stress and pain severity controlling for gender and age

Variable	Beta	β	F	df	R^2	R^2_{adj}	$R^2\Delta$
Step 1			2.135	2,94	.043	.023	.043
Gender [a]	-.101	.214					
Age	-.178	.099					
Step 2			4.012*	3,93	.115	.086	.071
Pain severity [b]	.274**	.100**					

* p < .05, ** p<.01

[a] 0 = male, 1 = female

[b] 0= "no pain", 10 = "pain as bad as you can imagine"

Regression Analyses

Table 13: Hierarchical regression analysis of stress and pain interference controlling for gender and age

Variable	Beta	β	F	df	R^2	R^2_{adj}	$R^2\Delta$
Step 1			2.135	2,94	.043	.023	.043
Gender [a]	.014	.006					
Age	-.142	-.141					
Step 2			13.514***	3,93	.304	.281	.260
Pain interference[b]	0.517***	.088***					

*** p < .001

[a] 0 = male, 1 = female

[b] 0 = "does not interfere"; 10 = "completely interferes"

Descriptive Results

Physical Activity	Work PA	91% low activity occupations
		Mean = 2.4 (SD = 1.08)
	Sport PA	74% low intensity sport; 55% walking
		Mean = 2.8 (SD = .64)

Descriptive Results

Physical Activity	Leisure PA	48.4% said their Leisure PA was “less” or “much less” than others their age
		Mean = 0.6 (SD = .55)
	Total PA	2.6 (min) to 7.6 (max)
		Mean: 5.4 (SD =1.09)

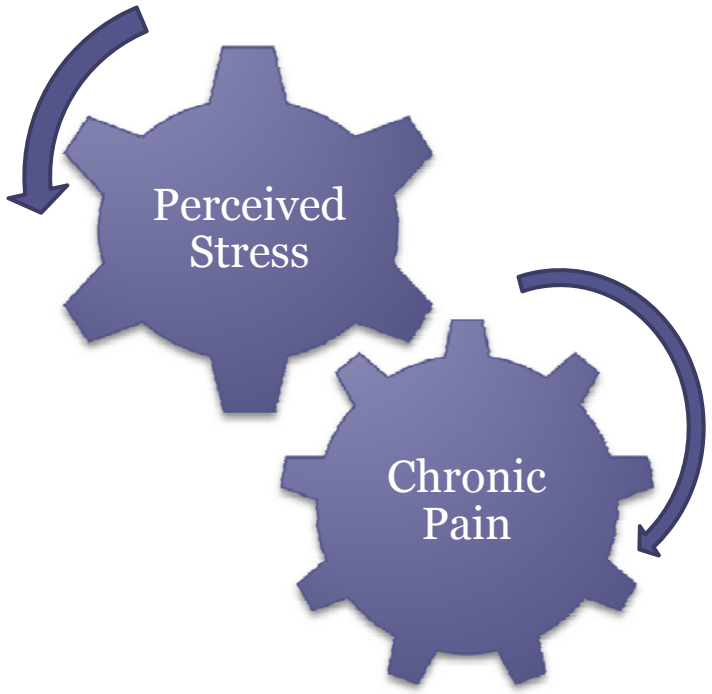
Physical Activity and Chronic Pain

*"Any bodily movement caused by muscle contraction and characterized by the level of physical effor*t"
(ACSM/AHA 2007).

Physical activity is now well recognized as being beneficial for individuals with CP
(Jones, Adams et al. 2006).

Chronic Pain and Stress

- Pain predicts daily stress and disability (Tsai, Tak et al. 2003)
- Perceived stress can initiate chronic pain, contribute to its perpetuation, or pain itself can be a stressor (Sauro and Becker 2009).



Differences Among More Active and Less Active Participants

- More active participants (M = 4.1, SD = 2.58) versus less active participants (M = 5.9, SD = 2.23) also reported less pain interference.

- Active participants compared to less active participants reported lower stress.
  *not statistically significant