



SMART CITIES Conference

EVIDENCE BASED MEASURES FOR BETTER MUSCULO-SKELETAL HEALTH OF WORKERS

Presenter Name: Nejc Šarabon

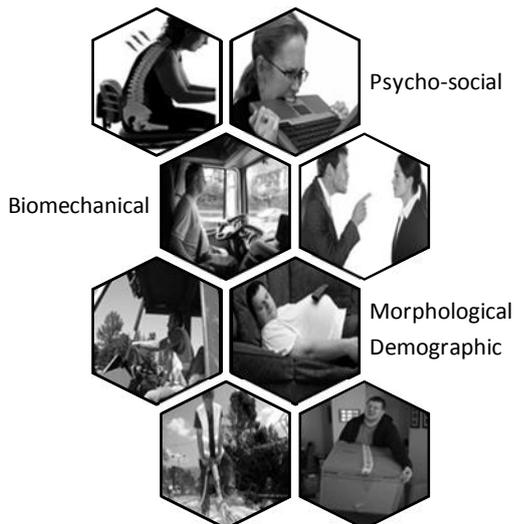
Presenter Title: Assoc. Prof. Dr. Sc.

Company/Institution: Andrej Maruži Institute, Department of Health Study, Koper, SI
S2P Ltd, Laboratory for Motor Control and Motor Behaviour, Ljubljana, SI

Health of the musculo-skeletal system and work



RISK FACTORS



RISK FACTORS



Low back pain (LBP) as a common problem

TNCPROJEKT



Huge socio-economic problem

70 to 85% incidence

Direct and indirect costs

UE costs several billion €

LOW BACK PAIN

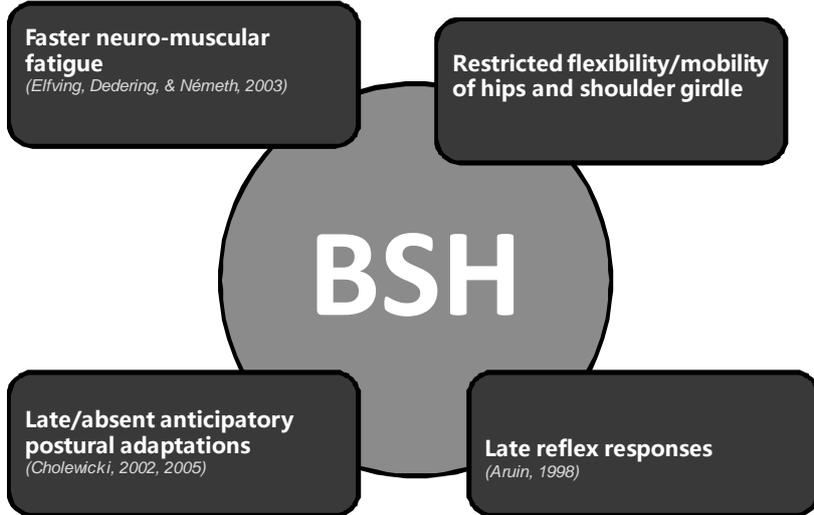
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Discovering underlying mechanisms of LBP

TNCPROJEKT



Faster neuro-muscular fatigue
(Elfvig, Dederig, & Németh, 2003)

Restricted flexibility/mobility of hips and shoulder girdle

Late/absent anticipatory postural adaptations
(Cholewicki, 2002, 2005)

Late reflex responses
(Aruin, 1998)

BSH

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Research project initiated 4 years ago

TNCPROJEKT

Evaluation of neuro-muscular trunk stabilization functions and development of exercise programs for lower back pain prevention

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PROJECT ORGANIZATION AND PARTNERS

TNCPROJEKT

ARRS APPLIED PROJECT (L5-4293)

1st year:
Methodological studies and development of objective evaluation techniques for LBP and related neuro-muscular functions of the trunk

2nd year:
Effects of short term interventions, mid-term intervention effects in chronic LBP

3rd and 4th year:
Effects of workplace, individualized interventions, active rests, goal directed exercise

MEASUREMENT, METHODOLOGY, REHABILITATION, TRAINING, ERGONOMICS

Based on several years of R&D work in the field of kinesiotherapy, injury prevention etc.

LUKA KOPER
Port of Koper

ZVD
ZVD Zavod za varstvo pri delu d.o.o.

Ortopedska bolnišnica
Valdobra

univerzitetni klinični center
Ljubljana

UNIVERSITETA V LJUBLJANI
Fakulteta za medicinske vede in ergonomiko

S2P
SCIENTOPRACTICE

ZDRAVIŠČE RADENCI
ZUNER 2000
SPA HOTELS & RESORTS

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MEASUREMENTS OPTIMIZATION





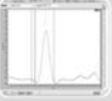
Methods validation



Video analysis



Anticipatory Postural Adaptations



EMG response



Reactive postural actions



Maximal (explosive) strength



Local muscular endurance



Dynamic balance



Active repositioning



Active tracking



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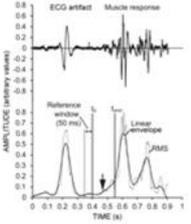
Mobile measurement system for testing TNC














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The influence of the work place / work load





SEDENTARY

FORCED POSTURE

PHYSICALLY DEMANDING

REAL LIFE ANALYSIS OF THE WORKPLACE	<ul style="list-style-type: none"> • BIOMECHANICAL ANALYSIS
DATABASE ON RETROSPECTION OF LBP RELATED ISSUES	<ul style="list-style-type: none"> • INSPECTION OF DOCUMENTATION • SURVEY
COMPLEX TESTING OF TRUNK NEUROMUSCULAR FUNCTIONS	<ul style="list-style-type: none"> • ACUTE AND CHRONIC EFFECTS OF A WORKPLACE
INDIVIDUALIZED INTERVENTION PROGRAMMS	<ul style="list-style-type: none"> • TESTING THE REAL EFFECTS OF ACTIVE RESTS AND FREE TIME ACTIVITES



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Port of Koper - The Partner










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Current activities and future plans

TNCPROJEKT

REAL TIME MEAS. OF THE ERGO-RELATED PARAMETERS

WORKER IN HIS/HER WORKING ENVIRONMENT

ERGO EXERCISE STATIONS

ADJUSTABLE ERGO OFFICE

Promotion & Education for Internal Motivation

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ERGO-CELL: online measurements for building healthier workplaces

TNCPROJEKT

GPS position sensor

Temp.

Humidity

3D acceleration & orientation

Heart rate

Skin resistance

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Thank You



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