HESAV-SCHOOL OF HEALTH SCIENCES

MOVEMENT, SPORT AND HEALTH

Multidisciplinary research, serving the health care field

HESAV
RECHERCHE

Index

Movement, sport and health

Physical activity and, more broadly, a specific population's relationship to the body, are closely connected to the social context in which it takes place since this area of life is characterised by the widest variations in terms of generation, gender and socio-economic status.

Movement and sport have both mental and physical health benefits, reducing risks for cardiovascular disorders/strokes and non-communicable diseases. Physical activity also transforms and questions our relationships with our bodies and with health and illness.

HESAV research therefore seeks to analyse the links between health and sport – be it with regard to prevention (illness, accident), to care interventions, or to rehabilitation – in both their biomedical and socio-historic dimensions. Research questions are elaborated in three complementary areas.

Elite and extreme sport

Sport is also about a quest for performance, and this search seems to endlessly push back the limits of the body. Interested in the field of elite sport, research conducted at HESAV investigates the role of health professionals in terms of optimizing preventive health interventions for elite athletes in order to improve performance. Scientific knowledge is also gathered on the effects of fatigue (ultra-trail), hypoxia (activity at high altitudes), sleep deprivation (pathological or in the context of ultra-endurance racing) on the body and on health in general.

Sport and handicap

Physical activity for people with reduced mobility, particularly for children with multiple handicaps, is at the heart of several research projects. Indeed, setting the body into motion results in dynamic postural adjustments with beneficial effects that, beyond the enjoyment they provide, are comparable to the impact of some therapeutic interventions.

Sport, body and life course

While sport was viewed, until recently, as reserved for the young, it is now practiced throughout life, including by the oldest individuals. Closely linked to gender roles and socio-economic status, the different forms that sport may take through the life course bring up new questions for health professionals: how do representations of the body and of health evolve throughout the lives of practitioners of various sports? How do athletes make decisions about the end of their careers? What are the links between physical activity and procreation for women?

What consequences – positive or negative – does physical activity have in relation to the aging process? Shedding light on these questions should help health professionals to provide appropriate care to practitioners of sport and enable them to prepare for the consequences of the unprecedented increase in the duration of the practice of sports.

Current research

Spinal kinematics and pain-related fear in chronic low back pain: a cohort study.

GUILLAUME CHRISTE

In collaboration with
Julien Favre
(co-director of Swiss BioMotion Lab, CHUV)
Brigitte Jolles-Haeberli
(co-director of Swiss BioMotion Lab, CHUV)

With support from
Commission scientifique du domaine santé HES-SO.

Hes·so
Haute Ecole Spécialisée de Suisse occidentale
Fachhochschule Westschweiz
University of Applied Sciences Western Switzerland

Chronic low back pain (CLBP) is one of the most frequent causes for limitations in daily, leisure and work-related activities. Alterations in spinal kinematics have consistently been reported in patients with CLBP, suggesting that this factor could contribute to the chronicity of pain and disability. Psychological factors, such as pain-related fear, have been described as a possible main cause of kinematic alterations in CLBP. While it is known that pain-related fear can drastically decrease during a rehabilitation program, it is not known to which degree it influences spinal kinematics.

Therefore, this study will test patients with CLBP before and after a 3-weeks multimodal rehabilitation program to investigate if a decrease in pain-related fear is associated with spinal kinematics improvements.

This study will advance our understanding of the relationships between psychological and physical factors in CLBP physiopathology. Ultimately, a better comprehension of the underlying mechanisms involved in CLBP rehabilitation will help enhance care for patients suffering from back pain.

The relation between psychological factors and spinal motor behaviour in low back pain: a systematic review and meta-analysis.

GUILLAUME CHRISTE

In collaboration with
Guillaume Christe (HESAV),
Emmanuelle Opsommer (HESAV)
Shannon Edd (Swiss BioMotion Lab, CHUV)
Geert Crombez (Ghent University)
Julien Favre (Swiss BioMotion Lab, CHUV)
Brigitte Jolles-Haeberli (Swiss BioMotion Lab, CHUV).

With support from Commission scientifique du domaine santé HES-SO.

Hes·so
Haute Ecole Spécialisée de Suisse occidentale
Fachhochschule Westschweiz
University of Applied Sciences Western Switzerland

Low back pain (LBP) is one of the most frequent causes for limitations in daily, leisure and work-related activities.

Alterations in spinal motor behaviour, such as limited amplitude of movement and elevated trunk muscle activity, have consistently been reported in individuals with LBP. This suggests that people with LBP move in a more rigid manner. Models used in rehabilitation argue that psychological factors influence spinal motor behaviour in patients with LBP.

However, inconsistent data exist in the literature, making the link between these psychological and biomechanical factors unclear. In order to improve rehabilitation strategies, and offer effective options to modify spinal movement, it is essential to better understand how these factors influence each other's.

Therefore, the aim of this systematic review is to determine if psychological factors predict spinal motor behaviour alterations in patients with LBP.

Current PhD research

Spinal kinematics and chronic low back pain.

GUILLAUME CHRISTE

Director of thesis
Faculty of Biology and Medicine,
University of Lausanne.

Co-Director of thesis
Dr. Julien Favre
Swiss BioMotion Lab,
CHUV.

Although chronic low back pain (CLBP) is a common medical condition, with major societal repercussions, its pathomechanism is still poorly understood. The contemporary understanding of CLBP suggests a multidimensional nature of the condition, particularly an interrelation between psychological and physical factors. This doctoral project aims at better understanding some underlying mechanisms in this complex condition, focussing on one possible cause of persistence of symptoms and disability in CLBP, spinal kinematics alterations (spinal movements). Furthermore, it aims at examining the relationship between spinal kinematics and psychological factors, such as kinesiophobia.

General objectives:

1. To improve our understanding of spinal kinematics alterations in CLBP patients.

2. To analyse the association between spinal kinematics and pain or disability.

3. To analyse the association between psychological variables and spinal kinematics.

4. To develop strategies to improve spinal kinematics in CLBP patients.

Methods
Pain-free subjects and patients with chronic low back pain will come to a movement analysis laboratory several times (for some, before and after a multidisciplinary rehabilitation program). Sensors will be installed on the back of the participants and their spinal kinematics will be measured during various movements and activities of daily life (walking, getting up from a chair, ...).

Completed research

Kenny Guex
In collaboration with
Francis Degache (HESAV)
Gerald Gremion (CHUV)
End 2017

Réponses physiologiques, perceptuelles et psychologiques lors d'une course cycliste d'ultra-endurance (RAAM) réalisée en relais.

Francis Degache
In collaboration with
Diane Schmied (HESAV)
Christopher Newman (CHUV)
Allan Bonjour (HESAV)
End 2016

Postural effects of using the tandem-ski in children, tenns and young adults with multiple disabilities: a pilot study.

Completed PhD research

Kenny Guex

Director of thesis
Prof. Grégoire Millet
Faculty of Biology and
Medicine, University of Lausanne

Co-director
Dr. Gerald Gremion
Faculty of Biology and
Medicine, University of Lausanne

End 2015

Testing, performance and injury prevention of the hamstring in sprinters.

All research can be found on the website of HESAV

http://recherche.hesav.ch

HAUTE ÉCOLE DE SANTÉ VAUD

Av. de Beaumont 21
1011 Lausanne
t: +41 21 316 80 01
recherche@hesav.ch
www.hesav.ch