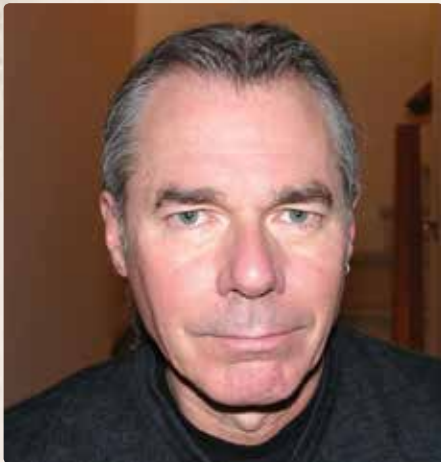


A psychological intervention to improve surgical outcomes

Dr Michael Sullivan, Professor of Psychology, Medicine and Neurology at **McGill University** Canada, is developing a targeted intervention to promote successful recovery following total knee arthroplasty. Here, he discusses the wider context of the study and the psychological influences on pain



How has understanding of the importance of psychosocial factors to physical wellbeing and recovery changed over recent decades?

Early explanations of psychological influences on pain were couched in psychoanalytic models which suggested that unconscious conflicts could give rise to symptoms of pain. However, research has failed to provide support for psychoanalytic perspectives on the psychology of pain.

Current models focus more on cognitive or personality factors that might influence how pain-relevant information is processed. Current models do not suggest that psychological influences 'cause' pain; rather they suggest that certain psychological factors might amplify the negative impact of pain on physical and emotional distress.

Previous research suggests that presurgical catastrophic thinking can impact postsurgical pain for up to two years following surgery. Could you explain the mechanisms through which this may occur?

It is becoming clearer that catastrophic thinking can have a negative impact on the recovery trajectory of individuals suffering from a variety of debilitating health and mental health conditions.

It has been suggested that catastrophising might lead to negative expectancies for recovery and increased attentional focus on pain symptoms, or that it may interfere with the effectiveness of coping strategies. From a physiological perspective, catastrophising may elevate proinflammatory cytokines, or reduce the effectiveness of endogenous pain modulation processes.

You developed the Pain Catastrophizing Scale (PCS) in 1995. Could you explain the premise of the scale and its far-reaching importance?

The premise of the scale is that it is possible to measure an individual's propensity to make 'catastrophic' appraisals of pain-related symptoms. Pain catastrophising has emerged as one of the most robust predictors of adverse health and mental health outcomes associated with pain.

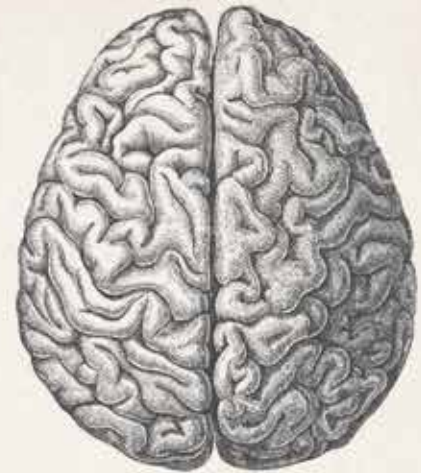
The PCS has been translated into approximately 20 languages, and the 1995 paper describing the development of the PCS now ranks among the top 100 most cited psychological publications of all time. Pain clinics around the globe have incorporated the scale as part of their standard assessment protocols.

While this has been an important outcome, treatments targeting catastrophic thinking have yet to be integrated into the clinical practice protocols of pain clinics in a systematic way.

Your current intervention project aims to promote 'activity-mobilisation' and 'life-role resumption'. Could you elucidate these terms and describe their significance within the context of total knee arthroplasty (TKA) recovery?

In part, pain symptoms and pain-related psychosocial risk factors exert their negative impact on recovery by reducing involvement in important life activities. Reduced involvement in activity in turn contributes to deconditioning, reduced quality of life and increased emotional distress.

In the proposed intervention programme, activity scheduling is used to 'mobilise' the patient



and prevent decline into a sedentary lifestyle. The intervention focuses specifically on the resumption of role-relevant activities (eg. family, spousal and community activities) that have been discontinued since these activities offer the greatest sense of meaning and purpose.

How does the proposed intervention differ from the standard TKA follow-up care currently available in Canada?

Unfortunately, there is little follow-up care offered to individuals recovering from TKA. As life expectancy after TKA continues to increase, this also means that the years of suffering extend for a longer period of time. The intervention we are proposing is therefore vital. It is low cost and we hope that it can be integrated into the structure of current clinical practice with limited demand on resources.

At what stage of this project are you currently?

The treatment-related materials, such as a treatment manual, client workbook and introductory videos, have been developed and tested. In January we are hoping to begin recruitment for the feasibility trial.

In 2011 you received the Canadian Psychological Association Award for Distinguished Contributions to Psychology as a Profession, and you currently hold a Canada Research Chair in Behavioral Health. Do you consider these accolades to be your greatest professional achievements?

Without doubt, it is a great honour to be recognised by one's peers in this manner. There are many rewarding aspects to my work: being located at McGill means that I'm surrounded by brilliant researchers and have the opportunity to work with incredible students. Moreover, the success of my work has led to the development of collaborations with great researchers around the world. Organisations like the Canadian Institutes of Health Research (CIHR) have been tremendously supportive of my research, which has meant I have had the necessary financial resources to carry out projects such as the one we are currently working on.

The psychology of disability prevention

Researchers are developing a programme that could improve recovery and enhance quality of life in patients undergoing total knee arthroplasty by targeting pain-related psychosocial risk factors



THE SINGLE MAJOR cause of disability in North America is arthritis. Osteoarthritis (OA) is its most common form, affecting an estimated 21 million individuals in the US and 3 million in Canada. Those suffering from severe pain or deformity due to OA of the knee joint may be treated with total knee arthroplasty (TKA), a procedure that involves the damaged joint being removed and replaced with a prosthetic one. This technique is successful in reducing pain and improving function in the majority of patients; however, 15-30 per cent still experience significant postsurgical pain and as many as 20 per cent of patients report moderate to severe pain a year after surgery.

A GROWING CONCERN

In light of these statistics, Dr Michael Sullivan Professor of Psychology, Medicine and Neurology at McGill University, Canada and his team are working on a research project funded by the Canadian Institutes of Health Research (CIHR) that aims to improve quality of life for postsurgery TKA patients. Sullivan's work is vital and timely as the demand for TKA has increased by 150 per cent over the past 10 years in Canada, and shifting demographics mean that figures are projected to double over the next decade.

Sullivan's risk-factor targeted intervention to promote successful recovery following TKA, currently in the preliminary development and testing phase, builds on a considerable volume of research into the psychology of pain. Studies have indicated that symptoms of pain and disability associated with OA, and following TKA, cannot fully be accounted

for by medical status. Indeed, evidence suggests that psychological factors can have considerable impact on pain experience and pain-related disability.

PAIN CATASTROPHISING

The impact of psychological factors on the experience of pain has been of longstanding primary interest to Sullivan, who devised the renowned Pain Catastrophizing Scale (PCS) in 1995. In experimental and clinical research studies, Sullivan and his team have shown that psychological factors such as pain catastrophising can contribute to more intense pain experience, greater emotional distress and more pronounced and prolonged disability.

In 2009, Sullivan et al published a study in *PAIN* examining psychological determinants of postsurgical pain and other difficulties following TKA. Crucially, they found that catastrophising predicts postsurgical pain, and can continue to have an impact up to two years after surgery. Furthermore, catastrophic thinking was found to exercise a significant degree of influence over various neurophysiological processes which modulate pain.

Armed with this evidence, which pertains specifically to pain experience in TKA patients, Sullivan's research group has devised a 10-week targeted intervention programme focused on equipping TKA patients with the psychological tools to complement successful physical recovery and to help them regain the active lifestyle lost through OA-related pain and disability.

A WEALTH OF EXPERIENCE

This is not the first time that Sullivan has developed such a scheme. He will build on the experience of the CIHR-funded Progressive Goal Attainment Programme (PGAP), which was developed to reduce pain-related psychosocial risk factors and encourage return-to-work in those suffering and recovering from musculoskeletal injuries.

The PGAP involves weekly sessions with a PGAP-trained clinician as well as a client workbook and instructional video designed to help both patients and their families to stay focused on recovery goals. Implementing a psychologically-based approach in the early stages of recovery from injury has proven to be very successful in preventing chronic disability associated with pain conditions.

PGAP has been embraced as far afield as New Zealand and has also been trialled in the US. Indeed, the benefits of the latter programme have been identified in a study which reported that injured workers participating in PGAP demonstrated a 50 per cent reduction in catastrophising, a 20 per cent decrease in pain-related fear and a 58 per cent reduction in depressive symptoms.

Moreover, a clinical trial showed that 75 per cent of individuals presenting with whiplash symptoms in a PGAP group returned to work compared to 50 per cent who followed usual treatment. In a country that has reported annual losses in production in excess of CAD \$32 billion (Health Canada) due to pain, such figures can have a vast socioeconomic impact.

INTELLIGENCE

DEVELOPMENT AND PRELIMINARY TESTING OF A RISK-FACTOR TARGETED INTERVENTION TO PROMOTE SUCCESSFUL RECOVERY FOLLOWING TOTAL KNEE ARTHROPLASTY

OBJECTIVES

To reduce pain-related psychosocial risk factors in order to maximise recovery potential and quality of life following Total Knee Arthroplasty (TKA).

KEY COLLABORATORS

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FUNDING

Canadian Institutes of Health Research

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Sullivan has published over 120 scientific papers, 15 chapters and five books. He currently holds a Canada Research Chair in Behavioral Health and in 2011 he received the Canadian Psychological Association Award for Distinguished Contributions to Psychology as a Profession.

Sullivan's work is vital and timely as the demand for TKA has increased by 150 per cent over the past 10 years in Canada, and shifting demographics mean that figures are projected to double over the next decade

MODELS FOR A NEW PROGRAMME

Sullivan is hoping for comparable success with his team's new risk-factor targeted intervention: "Among pain-related psychosocial risk factors, pain catastrophising has emerged as the most powerful and robust predictor of adverse health and mental health outcomes," he reflects – the intervention has been devised and developed within the context of Dr Johan Vlaeyen et al's fear-avoidance model (FAM). According to this model, catastrophic thinking induces fear of pain and re-injury, leading to avoidance of activity. This in turn fosters disability through disuse and deconditioning. Therefore, fear reduction and activity-mobilisation are central to Sullivan's programme.

CLINICIAN-PATIENT COOPERATION

The McGill group has drawn up a detailed plan of 10 weekly sessions, which include pre- and postsurgical information videos. The former aims to help reduce anxiety and pre-surgical catastrophic thinking by providing evidence of positive surgical outcomes and presenting early activity-mobilisation as the key to resuming an active life. The latter reiterates this second aspect, demonstrating how the intervention acts as a framework to achieving the desired quality of life. Once sessions begin, the first four weeks will involve highly structured and standardised activities. The purpose is to gradually shift emphasis from activity logging to goal setting and achievement as the patient's physical

rehabilitation progresses, enabling him/her to feel in control of the recovery, and his/her life.

The final six weeks of the programme are tailored towards individual needs. For example, the sessions may help the patient become more aware of the negative consequences of catastrophic thinking; involve exposure to activities that continue to be avoided by patients; or focus on techniques designed to challenge patients' disability beliefs. Clinicians may also encourage expectancy change, allowing patients to see that early, negative expectancies were inconsistent with the positive outcomes of surgery. Everything in the programme is geared towards helping patients regain the quality of life they hope for. Unlike PGAP, however, it is not a return-to-work initiative, but one that aims to help individuals resume their role as parent, grandparent, spouse and community member.

LOOKING AHEAD

Once Sullivan and his team have completed the trials needed to demonstrate that their programme can yield meaningful improvement in TKA patient health, mental health and reduction in disability and psychosocial risk factors, they will address wide-scale implementation. In a country where waiting lists for chronic pain clinics can be up to two years, sustainable, community-based initiatives such as those pioneered by the research group are a public health imperative.

