

## Review Article

# SEARCHING FOR A CONSENSUS MODEL IN DEALING WITH BACK PAIN

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## INTRODUCTION

A complaint, an injury, a therapy. Paradoxically, the constant progress in understanding back lesions and their biomechanics during the last 30 years has not resulted in a decrease in the incidence of low back complaints. On the other hand, cost of this invalidity due to low back pains are increasing. Organic lesions, the pronounced nature of which has been radiologically stated, do not always manifest themselves through commensurate symptoms and/ or functional problems (1). The findings from CT or MRI examination, or from operative surgery, are often less corroborative for pronounced functional complaints. Despite altherapy", an act performed on a suspected underlying organic injury, complaints often persist or become worse, and the degree of invalidity increases. Patients without verified organic injury run the risk of becoming stigmatized. Conventional care providers, who have learned during their training to treat the underlying lesions, are stunned baffled when it appears the back pain and back lesions are not interlinked. A different approach could be based on regarding pain not only as a sign of tissue injury but also as suffering in the broadest sense of the word. The emphasis is then placed on invalidity and function recovery. Medical science should thus abandon the role imposed upon it of helping to rid the world of pain, where false hopes are often raised (1).

### Special attention is drawn to

- The terminology: in addition to the term !psychosocial"# (2), the term !biopsychosocial"# is perhaps more appropriate.
- The increase in health consciousness: being healthy is not necessarily defined as having no symptoms. We all experience back pain and other muscular/skeletal complaints at some time (3).
- The self-limiting character of many disorders: due attention must also be paid to this phenomenon when back pain problems are involved.

In the following, we will consult the literature in order to try to find explanatory models for the !my back hurts'# complaint.

We also wish to propose an approach, which, underpinned by as much evidence as possible, takes into account the aspects and

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actors that have turned out to be relevant. We can talk in terms of a triptych, with the patient as the person requiring care, the doctor(s) and the physiotherapist/ Movement Consultant as the care providers and the government whose interests are at stake through social welfare (Figure 1).

### The model: load and load-bearing capacity

In the 'load and the load-bearing capacity' concept, the relevant factors can be subdivided into two categories:

- The effects of loading the muscle and skeleton system, i.e. the back.
- The (intrinsic or external) factors that enhance or keep up the load-bearing capacity of the spine as a whole.

We can ascertain what puts a load on the spinal column of this patient and what doesn't by consulting the load anamnesis (4), possibly aided by specific load tests. It can be determined whether the functional use of the lumbar region in flexion, or in extension, or possibly both, induces pain.

We must assume that each movement and each posture is (over)loading, if it is maintained too long. The Cinderella syndrome, for the muscle component, describes this (5) (Figure 2).

The combination of the load factor with the time factor and repetition frequency, will determine whether the load-bearing threshold is encountered. Fatigue and pain will (Waddell) clearly reveal the limits imposed by nature, at least initially.

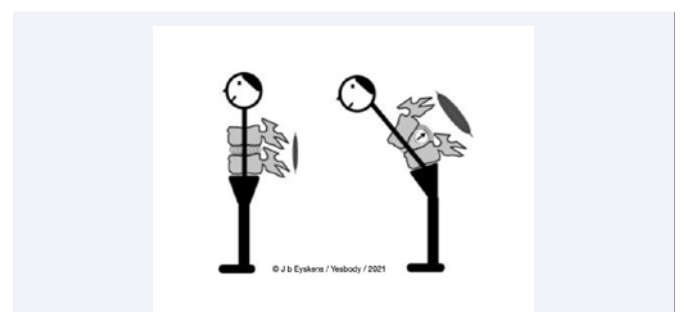


Figure 1

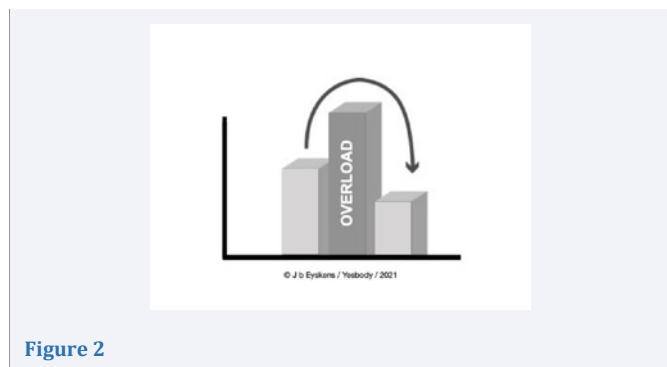


Figure 2

### 'Culture' versus 'nature'

Intercultural research reveals major differences between Westerners, on the one hand, and African natives, on the other hand. The latter appear to lift and sit more with a concave back. Moreover, they have longer leg muscles and more supple joints (ankles, knees, hips and lumbar region). The 'weightlifting technique', a safe way of lifting, is spontaneously employed by natives (Figure 3).

Thus, our culture compels us to impose greater loading on our backs; this is in keeping with the literature relating to low back complaints (6, 7) that states that frequent, prolonged, loaded and prolonged flexion causes, induces and sustains back pain.

Waddell has shown that backpain is a universal phenomenon after observing the rural population in Oman. They had never heard of orthopedics or surgery but they were all familiar with backpain. Moreover, very few of the natives become disabled as a result of backpain, unlike in western countries. In 1984, Anderson, already demonstrated the virtual absence of invalidity in a Nepal farming community, where up to 40 % of the people suffered from back pain at the time when the research was carried out.

### The human model: listen to the body

'But I must be able to do that'; 'Everyone does that!'; 'Before, I could do all of that without pain' are the underlying reasons that many people quote when urging their bodies to continue. Nociceptive pain can make us aware of any overloading. This is often the case, but then it is too late. If the load-bearing capacity is exceeded and symptoms of fatigue, stiffness and pain become evident, nature shows its limitations, its thresholds. (Figure 4)

If the problem persists and 'overloads' the load-bearing capacity, then the sustained injury (regardless of its extent) will adversely affect the load-bearing capacity and further reduce

it. We are becoming increasingly vulnerable. Repetitive actions thus present the greatest danger.

Prolonged, 'sustained' postures and activities are almost always taken for granted, without bearing in mind that they place many demands on our back.

Eventually, the load-bearing capacity can become diminished to such an extent that even the simplest of daily activities can be too much and one starts to ask oneself what the problem is. At this moment, the care provider must clearly demonstrate to the

patient that his postures and movements are the basis for his complaints.

**A functional model: movement and posture:** With regards to movements, we can name four categories. Two of them are characteristic of those movements that take place consciously as a result of a command that has been given (STAND!) or in order to fulfill an objective (the pressing of a key in PC work). Two other types of movements are not noticed. Unconscious movements are the nervous twitch (you notice it in someone else, not in yourself) and the functional movement (How does the shoulder move when a key is pressed?). (Figure 5)

Everyone has his/ her own movement pattern, a specific type of work, a certain sport, a hobby. Due to the fact that he/ she can only tell something about his/ her conscious movements, when asked what he or she really does during the day, the patient will provide an answer that does not match reality. He usually answers 'Nothing', meaning 'Nothing special', 'Nothing that I should not really do', 'Something that everyone does and that I

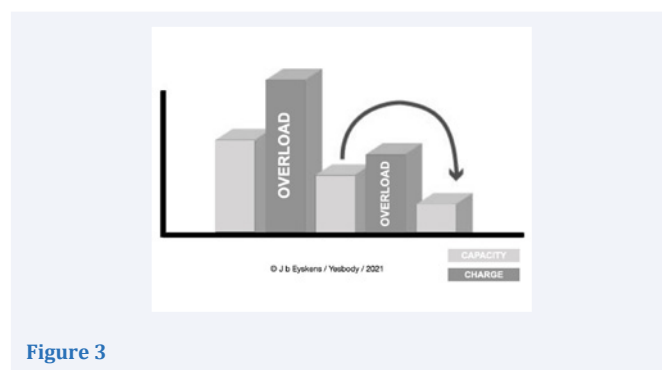


Figure 3



Figure 4

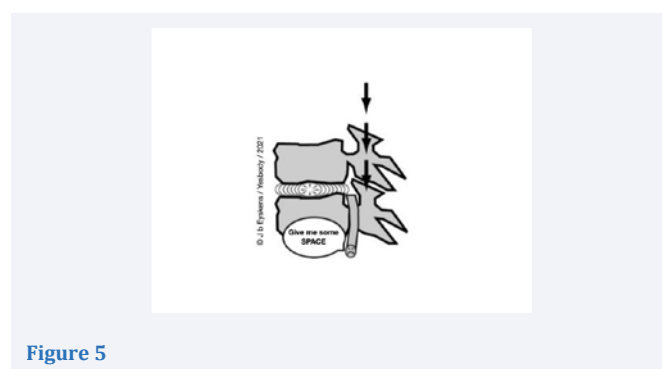


Figure 5

should also be able to do without problems'. Adopting a defensive stance, typical comments include: 'I use a vacuum cleaner, that is normal', 'Yes, I do the shopping, that is also normal'. 'Yes, I do the ironing for myself, my husband and my two children, this is certainly necessary!' It is more difficult to convince the patient (and less difficult to convince the therapist) that using a vacuum cleaner, doing the shopping and doing the ironing constitute inducing (and/ or sustaining) factors in the load anamnesis for the patient, and that it is imperative that they should firmly be dealt with.

**Posture:** Like movement, we are never aware of our posture, except when we consciously make an effort to do this or when problems such as pain and fatigue become evident. Individual 'posture' does not differ that much from one individual to another. Getting up in the morning, going to bed at night. Getting through the day vertically, sitting, standing and working. It is the same for everyone. The patient also regards this as 'normal'. However, people do not consciously adopt a 'posture'. Posture is rather a functional and unconscious necessity that makes it possible for activities to be carried out. When describing the Cinderella syndrome, Hagg demonstrates that for a number of individual neck/ shoulder muscle fibers, it is just as tiring to hold a five kilogram dumb-bell, a light feather or simply an outstretched arm in front of oneself. However, the patient who stretches out his arm assumes that these activities do not trigger problems. Since he does not realize this, he will not change his behavior. However, one immediately changes one's behavior when one, for example, cuts one's finger. (Figure 6)

**Where posture and movement meet:** Patterns are a specific type of conscious movements. They are postures and movements that are consciously performed and are no longer deliberate, at a certain moment in time. Some examples: a pupil decides to sit down at the beginning of the lesson but remains seated because the playtime is not for another two hours. A worker can cope with the production line speed during the first few hours of his shift; however, in the afternoon, the production line speed exceeds his decreasing (load-)bearing capacity. Patterns usually not only denote the start of the loss of the equilibrium between loadbearing capacity and the applied load but also the start of the transition from pain to suffering. The associated lack of understanding can, in turn, mark the beginning of communication problems between patient and surroundings, or patient and care provider. When the patient then requests help, these factors will place high demands on the anamnesis.

**The pain and fatigue tandem:** The physical posture structure that is usually subconsciously (over)loaded, initially signals via fatigue (not via pain) that the load-bearing threshold has been reached. Pain is the next stage, if steps are not taken on time to stop this. Moreover, fatigue causes loss of optimal coordination, and the risk of problems increases. Once this condition has deteriorated to the stage that even a minimal daily load becomes too much, the fatigue alarm function disappears. The patient no longer understands what is happening and is thus not able to adapt his behavior. Pain and fatigue then become analogous and constant. Anamnesticly, patients who complain of fatigue often display provocative behavior, possibly only regionally. Their behavior is such that, after some time, their movements, postures

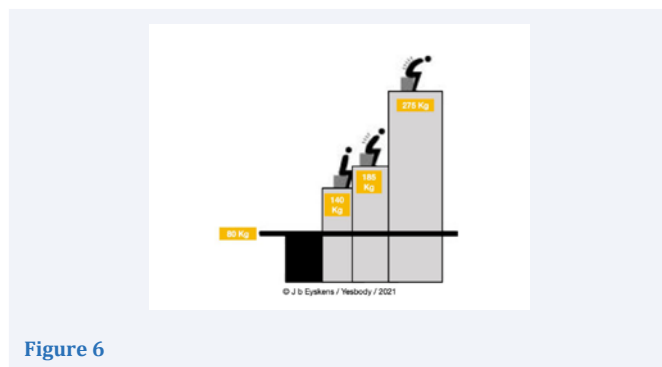


Figure 6

and loads induce and further sustain or enhance their specific complaint. Very often 'lying down' is quoted as the only 'action' resulting in the reduction of pain.

### Searching for a consensus model for an effective approach

In this respect, we wish to make use of as many elements as possible out of the medical literature. The recent 'Evidence-Based Medicine' quality label requires us to integrate the available clinical evidence with individual clinical expertise. In the same way, we can talk in terms of Evidence-Based Physiotherapy. In our opinion, it would be Utopia if we could guarantee a certain outcome as a result of certain therapeutical acts. This is also quoted by authors from the various disciplines. In the excellent reference work by Giles and Singer, 'The clinical anatomy and management of Cervical Spine Pain' (9), Gatterman, a Chiropractor, states: 'Management of neck pain by chiropractors involves more than simple manipulation of cervical joint dysfunction. Modification of precipitating factors in the workplace and other activities of daily living are equally important in the management and prevention of neck pain of mechanical origin.' (Figure 7).

T. McClune, an Osteopath, writes in his chapter: 'In osteopathic practice, neck pain is a common present symptom, often of mechanical origin. As clinicians, the duty of care for our patients is of utmost importance: treatment and advice should be given, based on sound biomechanical principles and all available research literature'. G. Jull (physiotherapist) quotes: 'The long-term aim is to prevent recurrent neck pain and chronic pain. All patients are provided with the knowledge of key issues in the prevention of recurrent neck pain together with an exercise program'. That's why we prefer to speak about Evidence-Based Medicine/ Physiotherapy, where the doctor and the therapist

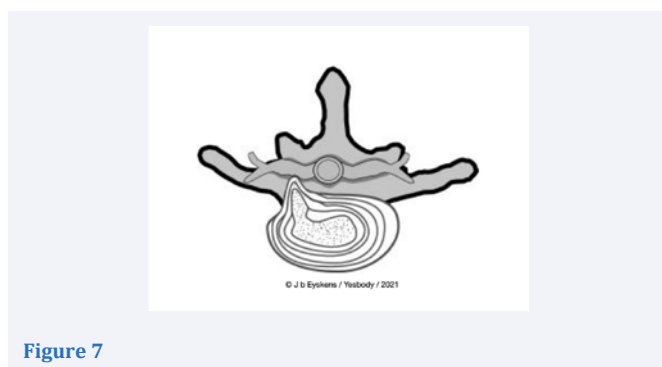


Figure 7

speak the same language and implement the same policy, based on literature data. This enables constructive communication in relation to the status of the person requiring care, thus resulting in trust in therapy and preventing 'doctor shopping'. Also see White's article, 'The back school of the future' (10).

**The patient and the care provider:** The role that the patient is allocated in the treatment of the back complaint is extremely important. The care provider is not able to provide an instant solution for his/ her problem. The patient becomes jointly responsible and is given an active role. In order to actively participate in rehabilitation programs, the 'locus of control' must be progressively assumed by the patient himself, whilst firmly believing that he is able to gradually learn how to find (at least partial) solutions for the complaints by himself. If the patient is allowed to/ encouraged to adopt a passive role, thus with an external locus of control (e.g. an active role adopted by the care provider), this can have a reverse (reinforcing), so a negative effect on the reported pain, on the negative perception of this, and on the invalidity, both during as well as after the treatment (11). Moreover, an unpleasant work environment, in cases where invalidity benefits are paid because of back problems, appears to be an additional complication (12). The role of the care provider(s) is to integrate the previously mentioned aspects so that they constitute a working entity. An effective approach will also integrate all of these elements, departing from a new concept.

**This can be briefly summarized as follows:**

<b>from:</b>	<b>to:</b>
reductionistic	integrated
limitations	possibilities
tissue injury	functional disturbance
passive participation	active participation
care provider responsibility	is responsible shared
causal errors efforts	recovery enhanced by own efforts
therapy-dependent	self-care treatment
treatment	learning process
curative.	(secondary) preventive.

**FROM PATIENT TO ACTIVELY-PARTICIPATING PATIENT ("ACTIENT")**

Later in the text, when developing a proposal for the consensus model, we will also use the terms 'Movement Consultant' instead of 'physiotherapist', and 'actient' (actively participating patient) instead of 'patient'.

**Time and context**

The patient is only 'being treated' for a certain period of time. During the rest of the time, he or she is at work, participating in sports, or involved in a hobby. In conventional (physio)therapy, chiropractics and osteopathy, the ratio between therapy time and the total time is 1:100. The care provider is aware of the inducing

factors that permanently (24 hours a day, 7 days a week) form a threat but he is not present when these inducing factors actually occur. It is therefore recommended to use the 'treatment' time so that the patient learns to adapt his movements, posture and behavior. The work environment and the social surroundings in which these take place, also often seem to be linked to the severity of the back complaints (Fordyce). A thorough and comprehensive anamnesis will have to find the right indicators for the good outcome of the treatment (13).

A patient with a chronic disorder is often confronted with the fact that the inducing activities have already been pointed out to them and that they have not taken into account the (often) simple advice. If they follow it now, they indeed admit that they should have 'listened' more attentively.

It is therefore useful to involve the other significant parties (family, colleagues,) in the patient's back pain. Individual therapy is therefore more preferable than group therapy (14). Moreover, the consensus model must be individually adapted, taking account of the social context such as work environment and the (re)paying third parties.

**Prevention and self-care**

The approach needs to be aimed at preventing relapse or at the very least the progression of the lesion and derives support from teaching the patient skills which they can/ must constantly put into practice. In other words, we are talking in terms of an ergonomic and preventive policy and about self-care. Since therapy is not the only answer to illness and discomfort, the 'actient' is expected to move the locus of control from internally to externally, to emancipate himself, to assume joint responsibility, and become less dependent on the health care (15). The doctor/ care provider is expected to learn how to implement this model, provide the patient with clear advice and to undergo professional training in order to have a better understanding of the capacity of emotional experience, the personal living environment and the explanatory models of the patient.

**A pro-active back program**

**The intake:** Fordyce states that the 'actient' must be provided with a comprehensive overview of the progress and possibilities for treatment, time diagrams and medical/ legal solutions at the beginning of the complaint. This enables the 'actient' to quickly totally immerse himself in the most suitable option, i.e. recovery and resuming normal activities, including return to work.

A case should be made for ascertaining the degree of invalidity by anamnestic and clinically examining the functional status of the patient, with this also being an important criterion for assessing the back complaint (16).

**The prevention plan from Swezey:** The treatment time in the practice, approximately 1% of the total time, must be used for:

- providing suitable information by means of visual instruction
- movement training so that the patient learns via practice about safe posture and how to move safely
- ergonomics in order to optimally adapt the surroundings



- compiling and supervising a tailor-made functional exercise plan During the remaining 99% of the total time when the 'actient' is at home, at work, participating in sport, or involved in a hobby, the patient must:

- move safely, by paying attention to the advice given to him
- also perform the exercises (that he/ she has been taught) at home
- systematically prepare him/ herself for reintegration in his/ her work, hobby and sport
- as jointly responsible 'actient', provide the necessary feedback and also think along with the implementation of the possibilities offered
- possibly use aids that limit the biomechanical load.

**The operant conditioning from Lindström:** In the case of chronic low back complaints, according to (17) results can be expected via active, 'learning via work'. This educational term is used here in the correct context. Via operant conditioning, the 'actient' learns by participating exactly what his possibilities are, provided the correct precautions (i.e. safe postures and safe movements) are implemented. The 'actient' thus has the feeling that he/ she is regaining control over his/ her own body so that the function is improved. In addition to the intrinsic elements of the rehabilitation, a great deal of attention is also paid to the form and the interaction. (18) emphasizes the importance of an understandable language during this entire process.

When a case is made for a multidisciplinary approach, it is assumed that the various care providers do not contradict each other (19).

**Institutional care:** The literature reveals a growing interest in second-line day centers (e.g. like the centre for chronic back patients in Sundsvall Sweden, or the Centre for Torture Victims in Copenhagen Denmark). Symptoms can include: rapid deterioration and certain biopsychosocial criteria. Admission or transfer to the third-line can also be considered.

**The outcome:** According to recent comprehensive literature research, the Back School only appears to be better than passive physiotherapy in the short term (20, 21). In particular, those attending the back school increased their knowledge about healthy and safe behavior (22). The frequency of doctor visits to participants appears to have decreased significantly. This is an indicator for self-care. The short-term effect is probably due to the fact that the patient who no longer has any complaints, pays less attention to his correct postures and movements. Improved after-care is necessary to extend the positive effect of the Back School, e.g. through an annual refresher course in the Back School. It is also important for other care providers to instruct patients about the correct movement pattern when they come into contact with them. In this way, a general practitioner who is being consulted for a lung complaint (for example), can enquire about a patient's previous back complaints, encourage him to keep moving safely and in particular, make him aware that frequent coughing, especially with an arched back, can induce a relapse. This is now already taking place at the practices of movement consultants: obese people are made aware of the danger that being overweight

presents for the muscle and skeleton system and are encouraged to strictly adhere to their medically prescribed diet.

With regard to other health indicators, such as the presence of backpain, besides the taking of medication, no other significant differences were detected between patients and 'actients' (23, 24). According to Daltroy, the average cost per relapse is the same for the two groups of 'patients'. However, Back Schools clearly appear to be a cost-effective measure (25, 26) because the absence from work is decreased. However, Daltroy does not agree with this. A possible explanation for this apparent contradiction is that Daltroy's objective was to prevent back complaints in people who previously did not show any symptoms (postmen); whereas, Versloot and Brown researched people who already suffered from back complaints. Obviously, the results of these different studies cannot be compared with each other. The results of the study by Versloot and Brown are better because the people suffering from back complaints were more motivated to participate in a therapeutic program and the volunteers who had no symptoms were less motivated to implement a preventive plan.

We can therefore conclude that an ergonomic and preventive policy (including back school) is a step in the right direction but the effect does not appear to be permanent, due to bad incorporation of the preferable healthy and safe back behavior. Moreover, the best results appear to have been obtained in Swedish Back Schools with an open regime for a stay up to 5 weeks (21). However, the questions remain: how it can be done in the most economical way and what can be done to implement the described approach at the earliest possible stage in the evolution of the complaint. Back Schools are generally successful in reducing invalidity and improving the functional status of the patient but the pain is often not completely eliminated (27). The literature provides an unambiguous answer to the effects of medical treatment on pain or on organic lesions (27, 28). Exercise programs certainly seem to have a positive effect on physical invalidity and functional status (29).

## CONCLUSION

Our point of departure was a paradox: major tissue injury does not always produce the most pain and the invalidity and findings observed per case do not always provide an explanation for the pain and the invalidity. The hypothesis that a function-oriented approach must be offered as soon as possible, has been underlined. A function-oriented approach provides better prospects for recovery, reduces the likelihood of lesion progression, and helps to prevent a relapse. The condition is that this approach is implemented in an unambiguous manner by the various care providers, also as far as language is concerned. The teaching of self-care is a crucial factor in this respect; the involvement of the significant third parties is also important. This 'actient'-oriented model ensures that the patient becomes fully conversant with his complaint, understands what has happened to himself, and what he can do about this himself. In other words, so that he regards the complaint as less of a handicap.

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