

# A case for responsiveness



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## BACKGROUND. Treatment Protocols: predetermined or responsive ?

There is nearly universal agreement that, whenever possible, treatment of musculoskeletal conditions should be based on the three pillars of evidence based medicine: evidence from the literature, clinical experience and patient values or preference. Once a treatment plan is determined, however, there is a lack of agreement on the appropriate basis for modifying the selected plan.

Some authors consider individual responses following treatment to be little more than random variation that should only influence the therapist's treatment plan when a particular patient has a 'very poor' response to treatment<sup>1</sup>.

Other authors suggest that adherence to protocols neither produces the best results nor reflects clinical practice<sup>2</sup> and that individual responses represent a valid basis for monitoring and refining treatment application<sup>3</sup>. This responsive approach often includes a multilevel process of reassessment that considers moment-to-moment changes in pain or stiffness during the application of a treatment as well as changes in signs, symptoms and function at intervals ranging from minutes to months.

The validity of a responsive approach relies on a number of often unstated assumptions including:

1. Moment-to-moment change in pain or stiffness during treatment predicts immediate change in patient signs and symptoms
2. Immediate change in signs, symptoms or function predicts between-session change and
3. Between-session change in signs, symptoms or function predicts end-of-treatment outcomes.

There is some early evidence to support these assumptions. Change in pain predicts longer term outcomes for the lumbar spine when treatment is based on a McKenzie approach<sup>4</sup> and within-session change in signs and symptoms predicts between-session change in patients with low back pain following manual therapy<sup>5</sup>.

It was not known if the assumptions underlying a responsive approach are valid in relation to manual therapy for the cervical spine. Specifically it was not known if change in stiffness perceivable by a therapist during application of passive movements predicts immediate change in signs and symptoms and whether immediate change in signs and symptoms predicts longer-term patient outcomes.

## AIMS

The aim of the studies described in this poster were to determine if it is reasonable to adopt a responsive approach to manual therapy using changes in passive stiffness to guide an ongoing modification of manual therapy interventions. Specifically, a series of studies were conducted to determine if immediate changes in passive stiffness as assessed by PA movements can be expected to predict longer-term outcomes in patients with neck pain of at least two-weeks duration.

*Subjects: Twenty volunteers with neck pain for greater than two weeks.*

*Method: Changes in stiffness of unilateral PA movements and total AROM were measured before and after four interventions including treatment by PA movements to a predetermined 'symptomatic' location*

*Subjects: 29 patients with neck pain for more than two weeks.*

*Method: Changes in active range of movement (AROM) were measured before and after a total of seventy pairs of consecutive treatments.*

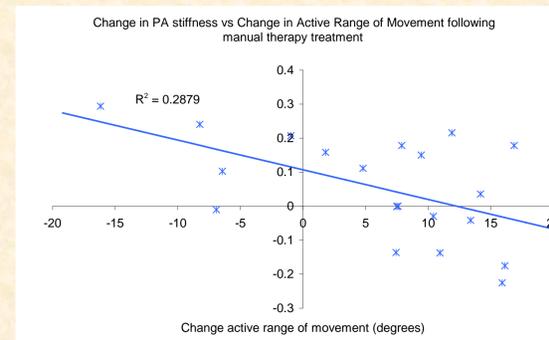
*Subjects: The same 29 patients as above with neck pain for more than two weeks.*

*Method: Changes in active range of movement (AROM) from before the first to before the second treatment were compared with changes from before the first to before the final treatment session.*

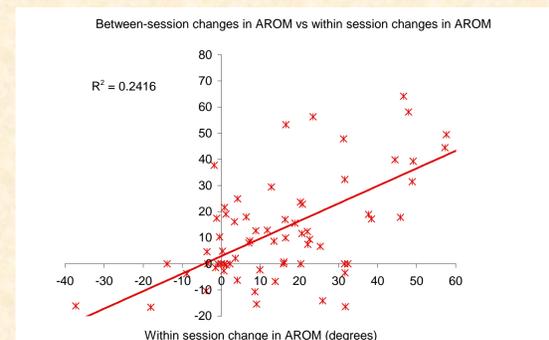
## References

## RESULTS.

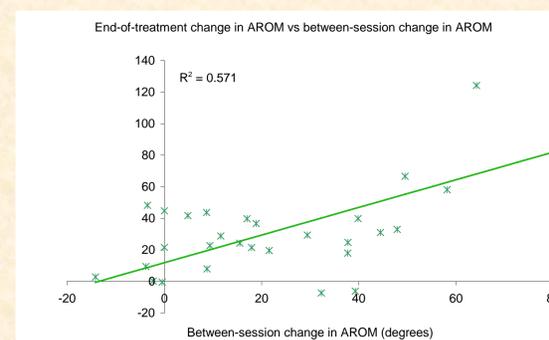
Following manual therapy treatment, change in PA stiffness was related to immediate change in active range of movement \*,



immediate change in active range of movement predicted between session change in active range of movement \*



and between session change in active range of movement predicted end of treatment outcomes \*.



Therefore:

Immediate change in PA stiffness can be expected to predict end of treatment outcomes.

\* Pearson correlation coefficients significant at  $p < 0.05$ .

*The change in PA stiffness related to change in AROM was clinically significant and specific. Change in PA stiffness:*

- Was large enough to be detectable by manual palpation
- But could occur in response to magnitudes of force ranging from 8 - 25 N for different subjects.
- Only occurred at the treated location and
- Only occurred when that location previously had been deemed to be symptomatic

*The ability of within- or between-session change in AROM to predict longer-term change was clinically significant and specific :*

- Approximately half of the improvement occurring within a treatment session was maintained between treatment sessions.
- Change in each axis of movement only predicted change in the same axis, e.g. rotation only predicted rotation; lateral flexion only predicted lateral flexion, and total AROM only predicted total AROM.

## DISCUSSION and CONCLUSIONS

Improvement in PA stiffness predicts immediate change in signs and symptoms which in turn predicts end of treatment outcomes. Greater improvement in PA stiffness would be expected to correspond to improved outcomes.

It would therefore appear reasonable to adopt a responsive approach to manual therapy using changes in passive stiffness as well as changes in signs and symptoms to guide ongoing modification of manual therapy interventions.

An additional finding was that within-session changes were only able to predict future changes in the same sign or symptom. If the therapist's intention is to assist the patient to achieve their goals, it would appear that signs or symptoms selected to guide treatment decisions should be directly related to specific patient goals.