

TESTS OF FUNCTION CONT...

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LOCALIZATION TESTS

LOCALIZATION TESTS CAN PINPOINT THE

LOCATION OF A LESION,

INDICATE THE SYMPTOMATIC MOVEMENT DIRECTION,

SOMETIMES ALSO MEASURE THE DEGREE OF RESTRICTION.

LOCALIZATION TESTS ARE ESPECIALLY USEFUL IN

INSTANCES WHERE

JOINTS HAVE NORMAL RANGE OF MOVEMENT

BUT ARE NEVERTHELESS SYMPTOMATIC.

- **LOCALIZATION TESTS LOCALIZATION TESTS USE SPECIFIC PASSIVE AND ACTIVE MOVEMENTS TO PROVOKE OR ALLEVIATE THE PATIENT'S SYMPTOMS.**
- **SYMPTOM PROVOCATION TESTS INCLUDE JOINT COMPRESSION AND MOVEMENT IN A SYMPTOM-PROVOKING DIRECTION.**
- **ALLEVIATION TESTS**
- **INCLUDE JOINT TRACTION AND MOVEMENT IN A SYMPTOM-ALLEVIATING DIRECTION.**

TRANSLATORIC JOINT PLAY TESTS

- **EVALUATE JOINT PLAY USING TRACTION, COMPRESSION, AND GLIDING IN ALL OF THE TRANSLATORIC DIRECTIONS IN WHICH A JOINT IS CAPABLE OF MOVING.**
- ATTEMPT TO DIRECT JOINT PLAY MOVEMENT FORCES PRIMARILY TOWARD A PARTICULAR JOINT WITHIN THE MOBILE SEGMENT, KEEPING IN MIND THAT EVEN SUCH SPECIFIC JOINT PLAY MOVEMENTS WILL AFFECT THE ENTIRE MOBILE SEGMENT.**
- **JOINT PLAY RANGE OF MOVEMENT IS GREATEST IN THE RESTING POSITION OF THE JOINT AND THEREFORE EASIEST TO FEEL IN THIS POSITION.**
- THE PRACTITIONER WITH ADVANCED SKILL ALSO EVALUATES JOINT PLAY OUTSIDE THE RESTING POSITION, WHERE A NATURALLY SMALLER RANGE OF MOVEMENT CAN MAKE THE MOVEMENT MORE CHALLENGING TO PALPATE.**

THERE ARE TWO WAYS TO TEST JOINT PLAY:

- 1) *WITHOUT FIXATION:*
- ***APPLY VIBRATIONS, OSCILLATIONS, OR SMALL AMPLITUDE JOINT PLAY MOVEMENTS WHILE YOU PALPATE THE JOINT SPACE.***
APPLY NO FIXATION OR STABILIZATION.
- **THIS METHOD OF JOINT PLAY TESTING IS ESPECIALLY USEFUL FOR SPINAL JOINT TESTING AND IS USUALLY USED FOR SCREENING PRIOR TO ATTEMPTING A FIXATION TECHNIQUE.**

- 2) *WITH FIXATION:*
- ***FIXATE ONE JOINT PARTNER AND MOVE THE OTHER THROUGH THE FULLEST POSSIBLE RANGE OF JOINT PLAY MOVEMENT.***
- **FEEL FOR CHANGES IN THE RESISTANCE TO THE MOVEMENT THROUGH**
- **GRADE II, PAST THE FIRST STOP, AND INTO GRADE III FOR END-FEEL.**
- **DETERMINE WHETHER THERE IS NORMAL MOVEMENT QUALITY THROUGH THE RANGE AND IF THERE IS HYPO- OR HYPERMOBILITY.**

TRACTION AND COMPRESSION TESTS

- **TRACTION AND COMPRESSION TESTS IN THE SPINE ARE USUALLY PERFORMED AS GENERAL TRANSLATORIC (LINEAR) MOVEMENTS THAT AFFECT SEVERAL SEGMENTS OR AN ENTIRE SPINAL REGION.**
- **SEGMENTAL TRACTION AND COMPRESSION TESTS ARE TECHNICALLY VERY DIFFICULT TO PERFORM AND ARE USED ONLY BY THE MOST SKILLED MANUAL THERAPISTS.**

SPINAL TRACTION TESTS

- **IF THE PATIENT HAS SYMPTOMS WITH SPINAL TRACTION TESTS IN THE NORMAL RESTING POSITION,**
 - USE THREE-DIMENSIONAL POSITIONING**
 - **TO FIND A POSITION OF GREATER COMFORT (I.E., THE ACTUAL RESTING POSITION) AND REEVALUATE THE PATIENT'S RESPONSE TO TRACTION.**
- **KEEP IN MIND THAT THE SMALL, MONO SEGMENTAL SPINAL MUSCLES MAY ALSO BE AFFECTED BY THE TRACTION TEST IF THEY ARE VERY SHORTENED OR TIGHT.**

SPINAL COMPRESSION TEST

- **IF A GENERAL SPINAL COMPRESSION TEST PRODUCES THE PATIENT'S COMPLAINTS, YOU MAY NEED TO LIMIT FURTHER EVALUATIVE TECHNIQUES THAT CAUSE JOINT COMPRESSION, FOR EXAMPLE, RESISTIVE TESTS OR OTHER TECHNIQUES THAT PRODUCE SECONDARY JOINT COMPRESSION FORCES.**
- **IF COMPRESSION TESTS IN THE RESTING POSITION ARE NEGATIVE,**
- **AND IF NO OTHER TESTS OF FUNCTION PROVOKE OR INCREASE THE PATIENT'S COMPLAINT, COMPRESSION TESTS SHOULD ALSO BE PERFORMED IN VARIOUS THREE-DIMENSIONAL POSITIONS.**
- **IN SOME SUBTLE JOINT DYSFUNCTIONS, THIS MAY BE THE ONLY WAY TO LOCATE A PATIENT'S LESION.**

- **SINCE TRACTION OFTEN RELIEVES AND COMPRESSION OFTEN AGGRAVATES JOINT PAIN,**
- **THESE JOINT PLAY MOVEMENTS HELP DETERMINE IF AN ARTICULAR LESION EXISTS.**
- **RESISTED MOVEMENTS PRODUCE SOME JOINT COMPRESSION, SO IT IS IMPORTANT TO TEST JOINT COMPRESSION SEPARATELY AND BEFORE RESISTED TESTS.**

GLIDING TESTS

- **GLIDING MOVEMENTS ARE ALSO IMPORTANT FOR DETERMINING THE SPECIFIC DIRECTION OF JOINT MOVEMENT RESTRICTIONS.**
- **THE SKILLED MANUAL THERAPIST EVALUATES GLIDING MOVEMENT BOTH IN THE JOINT'S RESTING POSITION AND IN VARIOUS POSITIONS OUTSIDE THE RESTING POSITION.**
- **SEGMENTAL JOINT PLAY IS PRIMARILY EVALUATED WITH TRANSLATORIC GLIDING, COMPARING ONE MOBILE SEGMENT WITH NEIGHBORING SEGMENTS.**
- **THERE SHOULD BE NO SIGNIFICANT MOBILITY DIFFERENCES IN ADJACENT SEGMENTS.**

- **SEGMENTAL JOINT PLAY GLIDING IS USUALLY FIRST ASSESSED BY PALPATING BETWEEN TWO VERTEBRAE DURING A RAPID OSCILLATORY MOVEMENT PARALLEL TO THE TREATMENT PLANE IN THE INTERVERTEBRAL DISC JOINT.**
- **IF THIS OSCILLATORY TEST REVEALS RESTRICTION OR SYMPTOMS, IT IS FOLLOWED WITH A SLOWER AND MORE THOROUGH ASSESSMENT OF JOINT PLAY GLIDING RANGE AND END-FEEL IN ALL DIRECTIONS USING MANUAL TECHNIQUES TO STABILIZE ADJACENT SEGMENTS .**

RESISTED MOVEMENTS

- **RESISTED TESTS SIMULTANEOUSLY EVALUATE**
- **NEUROMUSCULAR INTEGRITY,**
- **SENSORY & MOTOR INTEGRITY**
- **THE CONTRACTILE ELEMENTS,**
- **INDIRECTLY, THE STATUS OF ASSOCIATED JOINTS**
- **AND VASCULAR SUPPLIES.**
- **IT CAN BE MORE DIFFICULT TO INTERPRET RESISTED TESTS OF THE SPINAL MUSCLES THAN OF THE EXTREMITY MUSCLES FOR TWO REASONS.**

- **FIRST, OVERLAPPING NERVE SUPPLIES IN THE SPINAL MUSCLES DO NOT ALLOW ISOLATION OF SINGLE MUSCLE FOR STRENGTH TESTING OR SYMPTOM LOCALIZATION,**
- **AND SECOND, SPINAL MUSCLE CONTRACTIONS PRODUCE COMPRESSION IN UNDERLYING JOINTS WHICH MAY BE SYMPTOMATIC.**
- **TO RULE OUT UNDERLYING JOINTS AS A SOURCE OF SYMPTOMS, IT IS IMPORTANT TO ASSESS THE STATUS OF THESE JOINTS.**

- **THERE ARE THREE GENERAL METHODS OF PERFORMING RESISTED TESTS:**
- **MANUAL MUSCLE TESTING (STANDARD POSITIONS AND METHODS);**
- **MACHINES (FOR EXAMPLE, TENSIOMETERS AND VARIOUS ISOKINETIC TESTING DEVICES)**
- **AND SPECIFIC FUNCTIONAL MANEUVERS (FOR EXAMPLE, PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION TECHNIQUES).**

- **WHEN TESTING SPINAL MUSCLE PERFORMANCE WITH MANUAL RESISTANCE, THE POTENTIALLY STRONG MUSCLE CONTRACTIONS ARE BEST CONTROLLED IF THE THERAPIST INDUCES THE FORCE.**
- **THE PATIENT ATTEMPTS TO "HOLD" (IN RESPONSE TO YOUR INSTRUCTION, "DON' T LET ME MOVE YOU," RATHER THAN "PUSH" OR "PULL") WHILE YOU TRY TO MOVE THE SPINAL REGION IN THE DESIRED DIRECTION.**

- **ACCORDING TO CYRIAX, A RESISTED TEST MUST ELICIT A MAXIMAL MUSCLE CONTRACTION WHILE THE JOINT IS HELD STILL NEAR ITS MID-POSITION (RESTING POSITION).**
- **NOT ALLOWING MOVEMENT DURING A RESISTED TEST WILL HELP ELIMINATE THE JOINT AS THE SOURCE OF PAIN;**
- **HOWEVER, A CERTAIN AMOUNT OF JOINT COMPRESSION AND GLIDING IS INEVITABLE.**
- **TO EXCLUDE PAIN ARISING AS A RESULT OF JOINT DYSFUNCTION, COMPRESSION TESTS SHOULD BE PERFORMED *BEFORE THE RESISTED TEST.***
- ***THEREFORE, IF COMPRESSION TESTS PROVOKE PAIN, RESISTED TESTS ARE OF LIMITED VALUE.***

CYRIAX INTERPRETS RESISTED TESTS

Painful and strong	=	minor lesion of a muscle or tendon
Painful and weak	=	major lesion of a muscle or tendon
Painless and weak	=	neurological lesion or complete rupture of a muscle or tendon
Painless and strong	=	normal

PASSIVE SOFT TISSUE MOVEMENTS

- **SOFT TISSUES ARE EXAMINED SIMILARLY TO JOINTS, USING PASSIVE MOVEMENTS TO ASSESS THE QUANTITY AND QUALITY OF MOVEMENT AND PAIN.**
- **THERE ARE TWO MAJOR TYPES OF PASSIVE SOFT TISSUE MOVEMENTS:**
- **PHYSIOLOGICAL **AND** ACCESSORY MOVEMENTS.**

PHYSIOLOGICAL MOVEMENTS (MUSCLE LENGTH AND END-FEEL)

- **TESTS OF SOFT TISSUE LENGTH AND END-FEEL ARE PERFORMED BY MOVING A LIMB OR BONE SO THAT MUSCLE ATTACHMENTS ARE MOVED MAXIMALLY APART (LENGTHENED).**
- **IT IS OFTEN NECESSARY TO USE COMBINED MOVEMENTS TO ACHIEVE MAXIMAL TISSUE LENGTHENING.**
- **EXAMINING SOFT TISSUE END-FEEL DURING LENGTHENING IS PARTICULARLY IMPORTANT TO HELP DIFFERENTIATE JOINT FROM SOFT TISSUE DYSFUNCTION AND TO DETERMINE THE TYPE OF SOFT TISSUE DYSFUNCTION.**
- **FOR EXAMPLE,**
- **MUSCLE SPASM WILL HAVE A LESS FIRM END-FEEL THAN A MUSCLE CONTRACTURE.**

- **IT IS NOT UNUSUAL FOR JOINT STRUCTURES TO LIMIT MOVEMENT BEFORE A POSITION OF MUSCLE STRETCH CAN BE ATTAINED, ESPECIALLY IN THE PRESENCE OF CHRONIC JOINT DISORDERS WITH ASSOCIATED DEGENERATIVE CHANGES.**
- **MUSCLE LENGTH TESTING REQUIRES THAT YOU BE KNOWLEDGEABLE ABOUT MUSCLE FUNCTIONS , MUSCLE ATTACHMENTS, AND MUSCLE RELATIONSHIPS TO EACH JOINT THEY CROSS.**

ACCESSORY SOFT TISSUE MOVEMENT

- **EXAMINATION OF ACCESSORY SOFT TISSUE MOVEMENT TESTS**
- **ELASTICITY,**
- **MOBILITY,**
- **AND TEXTURE OF SOFT TISSUES.**
- **ACCESSORY SOFT TISSUE MOVEMENT CANNOT BE PERFORMED ACTIVELY, BUT IS TESTED BY**
- **PASSIVELY MANIPULATING SOFT TISSUES IN ALL DIRECTIONS.**
- **SKILLFUL TECHNIQUE CAN HELP PINPOINT LOCALIZED CHANGES IN SOFT TISSUE TEXTURE DUE TO,**
- **FOR EXAMPLE, SCAR TISSUE, EDEMA, ADHESIONS, AND MUSCLE SPASM.**

- **MUSCLE PLAY IS AN ACCESSORY SOFT TISSUE MOVEMENT. MUSCLE PLAY TESTING INVOLVES MANUALLY MOVING MUSCLES IN**
- **TRANSVERSE,**
- **OBLIQUE,**
- **AND PARALLEL DIRECTIONS**
- **IN RELATION TO THE MUSCLE FIBERS.**
- **A PASSIVE LATERAL MOVEMENT OF MUSCLE IS ONE EXAMPLE OF MUSCLE PLAY .**

ADDITIONAL TESTS

- **ADDITIONAL EXAMINATION PROCEDURES MAY BE NECESSARY, INCLUDING ASSESSMENT OF**
- **COORDINATION,**
- **SPEED,**
- **ENDURANCE,**
- **FUNCTIONAL WORK CAPACITY,**
- **AND WORK SITE ERGONOMIC EVALUATIONS.**
- **THESE EXAMS DO NOT ALWAYS HAVE TO BE COMPLICATED,EXPENSIVE, OR REQUIRE SPECIAL EQUIPMENT IN ORDER TO GIVE VALID, USEFUL AND IMPORTANT INFORMATION.**