THERAPEUTIC EXERCISE BASICS……..

97750, 97110, 97530, 97535, 97112, 97140, 97150, 97802, 97803, A9150

GUIDELINES FOR THERAPEUTIC EXERCISE

Supervised exercise is an essential component of Chiropractic Rehabilitation as a whole. Exercise as a prescriptive part of rehabilitation is used as a treatment technique for dysfunction. It is primarily aimed at conditioning the musculoskeletal system specifically in the area of dysfunction as well as enable the supporting structures surrounding the area of injury. A secondary, but important purpose of therapeutic exercise is to increase or maintain a level of cardiovascular(aerobic) fitness to ensure overall health and wellness of the patient.

I. GENERAL COMMENTS ON EXERCISE

A. THE S.A.I.D. PRINCIPLE

Specific Adaptivity to Imposed Demands: When the body is placed under stress, it will attempt to overcome the stress by adapting specifically to the demands put upon it. In other words, when weak or dysfunctional muscles are exercised (stressed), they will become stronger and more functional to accommodate for the stress.

B.THE F. I. T. PRINCIPLE

Frequency, Intensity, Time: To affect gains from exercise over a period of time, the exercise program needs to be changed and updated periodically. Altering any one or more of the components of frequency, intensity, or time can change an exercise program. By increasing the frequency of exercise sessions, the intensity of exercises, or the length of time a person exercises, we allow the person to continue to improve.

1. Frequency

This is the number of exercise sessions in a given time period, typically one week. General rule for frequency is 3 to 5 times per week. Frequency can also refer to the number of sets of a particular exercise that are performed in a single session, or even the number of repetitions in a set. A general rule of thumb is 1 to 3 sets of 8 to 12 repetitions.

2. Intensity

This refers to the effort required to perform exercise. This is usually expressed as a percentage of maximum heart rate (HR max} or maximum oxygen uptake {VO 2 max} when exercise is aerobic in nature. Exercise involving resistance training will use a percentage of the maximum amount of resistance produced for either one repetition, the 1 repetition max {IRM} or 10 repetitions of the movement (10 RM}. General rule for intensity is that the patient should exercise between 60~ and 85~ of his maximum possible effort if there is no pain present... If pain is present, let pain be the guideline to intensity. Communication between the patient and the clinician is key.

3. Time

Time or duration refers to the length of time or duration of the exercise session. General rule for duration: The entire exercise session (warm-up, stretching, conditioning, cool-down) should take no longer than 60 minutes. For adherence purposes, the optimum duration is 20 to 45 minutes.

C. MODES OF EXERCISE

1. Passive Exercise

Exercise is directed and performed by the clinician and the patient is passive. Passive exercise provides joint range of motion and mobility of non-contractile joint structures as well as increasing musculotendinous length through flexibility.

2. Active-Assistive Exercise

The patient is assisted by the clinician in the exercise to accommodate for l imitations of weakness and/or pain. This is

An intermediate phase between passive and active exercise.

3. Active Exercise

Active exercise involves normal voluntary movement through a range of motion. This is used to maintain whatever range of motion that has been attained by passive movement or maintain a present range. Performance of active exercise is completely without the assistance of a clinician.

4. Resistive Exercise

Resistive exercises are used to gain muscular strength, power, and endurance. Resistance can be given through the use of manual resistance, elastic band or tubing, free weight (dumbbells}, exercise equipment and machines. A patient should not be cleared to use exercise machines unless a manual assessment of strength has been performed and it has been determined that the patient can perform the machine exercise safely at the lowest resistance setting.

D. TYPES OF MUSCULAR CONTRACTION

1. Isometric

A contraction of the muscle with no observable functional joint movement at zero speed. The joint is at a fixed angle

And there is no movement through a range.

2. Isotonic

Contraction of a muscle where the joint moves through a range employing a fixed or constant resistance. The speed of exercise may vary. Traditional weight training (free weights}, manual resistance, and Universal Gym, are examples.

3. Isokinetic

Exercise through a full range of motion, where the speed of movement is held constant. The resistance varies through the range. Isokinetic devices allow for accommodation of weak and strong points in the range of motion. The patient,

therefore, does not experience a “sticking point” as with isotonic exercise. Since the speed of movement is constant, the machine provides resistance according to the amount of force the patient applies. Many isokinetic devices have the capacity to test muscular strength, power, and endurance and compare strength bilaterally, as well as between agonistic and antagonistic muscle groups. Examples of isokinetic equipment are Cyber, Kin-Com, and Bide.

4. Concentric vs. Eccentric Contraction

a. Concentric: as tension increases and the joint moves through a range of motion, there is a shortening of the muscle as the origin and insertion of the muscle approximate.

b. Eccentric: as tension increases and the joint moves through a range of motion, there is a lengthening of the muscle and the origin and insertion move away from each other.

I. GOALS OF THERAPEUTIC EXERCISE

A. PRIMARY/SHORT TERM GOALS

1. Decrease pain
2. Decrease inflammation
3. Decrease intracapsular effusion/synovitis
4. Decrease extracapsu1ar edema
5. Increase joint range of motion
6. Allow increase effectiveness of chiropractic manipulation
7. Educate the patient

B. INTERMEDIATE GOALS

1. Increase joint range of motion
2. Increase musculotendinous flexibility
3. Increase muscular strength
4. Increase muscular power
5. Increase muscular endurance
6. Increase ligament and tendon strength
7. Maintain cardiovascular endurance

C. LONG TERM GOALS

1. Return of full unrestricted range of motion

2. Normal strength
3. Normal function
4. Sport/occupation-specific function
5. Elimination of pain
6. Restore balance/proprioception
7. Improve timing
8. Improve kinesthetic awareness
9. Improve coordination
10. Provide joint stability
11. Permit joint mobility
12. Promote high efficiency of all functioning elements
13. Restoration of normal biomechanical function to ensure progressive return to functional activities and work tolerance.
14. Prevention of further injury
15. Improve patient's quality of life
16. Restore patient's self-confidence

A. BALANCE

Discern, through observation and manual muscle testing, if there are any apparent muscle imbalances. The program should involve exercising all the muscles involved in joint movement for stabilization purposes. Considerations must be taken to strengthen and promote growth of weakened, atrophied, or dysfunctional muscles. Muscle imbalances predispose the patient to injury and are major contributors to joint pain, dysfunction, and instability.

B. REALITY

The program must be GOAL ORIENTED. Goals should be realistic, attainable, and quantifiable. Also, it is important to discuss with the patient the necessity of planned "sacrifices" such as investment of time, effort, and money. The rewards of such sacrifices should be discussed as well.

C. SPECIFICITY

The exercise program should address the problem at hand or the chief complaint. Only after improvement of the specific injury can other considerations of a healthy lifestyle be addressed. Taking one thing at time decreased the intimidation factor many patients experience with the commencement of an exercise program.

D. PROGRESSION

For long-term improvement to take place, loads must be increased gradually as the exercise level improves. Slow rates of improvement will not induce and alarm response

associated with soreness, stiffness, and fatigue. Do not try to do too much too soon.

E. VARIETY

The program should be varied on a regular basis to increase motivation and minimize the likelihood of staleness. Make changes in exercises, equipment, repetitions, sets, schedules, location, time of day, or add exercises to enhance overall fitness. This should be done at least every 4 weeks or so. This also gives the practitioner an opportunity to re-evaluate the patient and to change the goals and objectives of the program.

F. REGULARITY

Exercise must be performed on a regular basis, preferably 3 times and up to 5 or more times per week. Without regularity of exercise, only insignificant, if any, changes will take place. Adherence is best assured with time-efficient programs that are relatively simple and painless, and are not overly strenuous. Patients do not look forward to pain, strain, and fatigue.

V. PRINCIPLES OF THERAPEUTIC EXERCISE

CONTRAINDICATIONS

1. Joint or muscle tissue inflammation
2. Joint or muscle tissue pain

A. EVALUATE EACH CASE TO PLAN A PROGRAM CONSISTENT WITH DEFINITIVE CARE BASED ON SPECIFIC INDICATION.

1. Rehabilitation techniques should be an adjunct to, not a substitute for, chiropractic management of injury, disease, or dysfunction.
2. Anticipate the scope of exercise therapy needed based on the nature of the case and the possible unavoidable restrictions that may be involved.
3. Discuss the progress of each patient with the patient and others involved in the care and management process.

B. MOBILIZE AS EARLY AS POSSIBLE WITHOUT JEOPARDIZING HEALING

1. Early motion retards atrophy, prevents permanent scar Formation, preserves joint range, disperses edema, reduces the painful period, stimulates reciprocal muscle function, and reduces the extent and period of disability.
2. Maintain function of uninjured parts.
3. Establish function through exercise that incorporates specific, purposeful movements.

C. REDUCE/RELIEVE PAIN AND EDEMA BEFORE PERFORMING EXERCISES

1. The use of physical modalities may be indicated to decrease pain and muscle

spasm, making exercises more tolerable.
2. Patients usually resent painful activities.
3. Seldom exceed any patient's tolerance for pain.

D. AVOID ACTIVITIES THAT THE PATIENT DOES NOT HAVE REASONABLE CHANCE TO ACCOMPLISH

1. Avoid frustration and promote motivation through success
2. Success will increase chances of patient compliance and program adherence and improve patient's self-confidence.

E. ADDRESS WEAK MUSCLES SPECIFICALLY

1. Select muscle re-education and exercises to help regain power, coordination, length, reciprocation, and relaxation.
2. Avoid repeated muscle fatigue.

F. TREAT Joints GENTLY

1. Avoid forced exercise movements.
2. Encourage and educate the patient to initiate essential active motions.
3. Do not place resistance against inflamed joints.
4. Combine complete rest with short periods of motion for painful joints.
5. Make sure weight bearing does not exceed the structural capacity of the bones, capsules, ligaments, and musculature. Otherwise, begin weight bearing as soon as possible and encourage normal gait patterning.

G. DO NOT CONTINUE WITH THE SAME PLAN OF CARE FOREVER

1. Effective exercise programs must be directed toward the re-establishment of voluntary function.
2. Irreversible damage is sometimes the unfortunate result of trauma or disease and those 1imitations should be recognized.
3. The patient shou1d be made aware of his/her status when released. Tel1 him/her what his/her capacity and what his/her limitations are.
4. Give detailed instructions as to a home maintenance exercise programs.
5. The patient must take responsibility for his/her own well being at some point. Guided in-office exercise programs can only go so far.

NOTE: physical function, once lost, must be trained for. This is a graded process of daily super imposition and summation of improvement. This process is steady and very often slow. The development of the patient's own strength and function is primary. He/she must strive to perform without the aid of the clinician.

Prevention of recurring or subsequent injury is key to the rehabilitation process.

Take the following precautions:

1. Don 't try to do too much too soon

2. “Train, don ‘t strain” vs. ‘no pain, no gain”
3. Allow time for recovery of exercised muscles (about 48 hours).
4. Always warm up and cool down
5. Overstraining should never occur if the patient is properly educated and supervised.
6. Know and recognize the signs of over training/overwork:
   a. Soreness in muscles and joints
   b. Heaviness in arms or legs
   c. Inability to relax
   d. Persistent tiredness
   e. Repeated injury

V. ESTABLISHMENT OF NEED

A. BASED ON CLINICAL JUDGEMENT

1. Physician
2. Clinical Staff
3. Individua1 is responsib1e for care

B. CLINICAL TESTING

1. Warranted by diagnosis, patients history, clinical evaluation, risk evaluation for pre-emp1oyment, etc.
2. As a baseline for rehabilitation (ROH testing, strength testing)
3. As a basis for preventative care

VI. PROGRAM DEVELOPMENT

A. PRESCRIPTION GUIDELINES

1. Program written/prescribed by a 1icensed health care professiona1 whose scope of practice includes rehabi1tation.
2. Monitor/chart all progress including subjective assessments
3. Patient education - explain verbally and with illustrations. Have patient perform all exercises to assure patient’s ability to perform, patient’s safety, and avoid painful motions.
4. Program must be progressive - start with only a few exercises, and work from the easiest to the most difficult.
5. Choose exercises according to patient’s present level of activity, ability, and pain.
6. No changes in the program should be made without prior approval of the clinician.
7. Keep open communication between the patient and the clinician, discussing positives and negatives of the program at all times.
8. Conduct regular re-evaluations.

B. GOAL SETTING This is a group effort between the patient and all those responsible for his/her care.

1. Determine any limitations to rehabilitation or recovery.
2. Make goals with reference to:
   a. improvement of disability status
   b. return to pre-injury status
   c. retraining of skills
   d. training of new skills pertinent to performance
   e. prevention of new or recurring injury
3. Goals should address improvement, restoration, and maintenance of strength, flexibility, endurance, coordination, relaxation, and specific skill levels.
4. Short term goals - 7 to 10 days from beginning of program.
   Focus: decrease pain and increase ROM (passive & active).
5. Intermediate goals - 14 to 21 days. Focus: increase muscular strength, endurance, and power.
6. Long term goals - up to 12 weeks. Focus: increase strength, increase coordination, return to functional integrity.

C. EXERCISE APPLICATION STANDARDS

1. Warm-up and cool-down
   a. low-level activity.
   b. stretching/flexibility.
2. Appropriateness of exercise.
3. Safety
   a. stress technique and control.
   b. choose safe, painless exercises.
   c. choose appropriate resistance.
4. Mandatory supervision.
5. Discontinue exercise if there is extreme pain or over fatigue.
6. Program should be progressive.
7. Determine pain-free ROM at each session.
8. Involve exercises for surrounding/supporting areas or joints.

VII. STAGES OF REHABILITATIVE EXERCISE

A. STAGE 1

1. PASSIVE RANGE OF MOTION

a. Floor Stabilization Exercises – Low Tech Address all ranges of motion. (Gym Ball, Tubing, Floor, McKenzie etc.)
   i. Flexion and Extension until 75 % PFROM is achieved.
   ii. Lateral Flexion or Abduction / Adduction until 75% PFROM is achieved
   iii. Rotation or Diagonal Movements until 75% PFROM is achieved
b. Avoid painful motion.
c. Move slowly and pause when pain and/or muscle guarding limit range.
d. Use chiropractic manipulation, manual therapy, and physical modalities as indicated to facilitate restoration and maintenance of ROM.

2. ISOMETRIC EXERCISE

a. Perform isometric contractions at 20-degree intervals through the pain-free range.
b. Contract against resistance and hold for 10 seconds before relaxing.
c. Repeat at next 20-degree interval.
d. Exercise through full range of intervals 3 to 5 times.
e. Rule of Tens

3. ACTIVE RANGE OF MOTION

a. Patient moves through full pain-free range.
b. Movement must be slow, steady, with good technique.
c. 12-15 repetitions of movement at each range of motion involved in joint movement, including the proximal and distal joints.

B. STAGE 2: MANUAL RESISTANCE ACTIVE EXERCISE / Machines, tubing, strengthening.

1. Clinician allows resistance manually while patient actively moves through pain-free range of motion. Remember guidelines for graduation of stages. Single plane of motion.
2. Resistance should not cause joint or muscle pain.
3. Patient performs 10-12 repetitions, or chosen technique of the exercise at every motion involved in joint movement (Zinovieff, Osborne, Oxford, Pyrimid etc.)

C. STAGE 3: EXTERNALLY RESISTED (TUBING, DUMBBELLS) ACTIVE EXERCISE

1. The resistance in Stage III is provided by dumbbells, elastic tubing, exercise equipment or even patient's own body weight. Dynamic and rotations movements. See Functional Stage III exercise protocols in manual.
2. Exercise is performed through a pain-free range of motion.
3. Patient must be able to perform 15-20repetitions of the exercise with no assistance using lightest available resistance.
4. Patient performs 15-20 repetitions of the exercise and gradually works up to three sets of 8 to 15 repetitions for each exercise.
5. When patient can successfully complete 3 sets of the exercise with no pain, the resistance can be increased.

D. STAGE 4: HOME PROGRAM OF MAINTENANCE

1. A clear, written program is given to the patient to do at home or at another site outside the clinic.
2. The patient should continue chiropractic care per clinician's orders.
3. Patient should not be released from the supervised exercise program without approval of the treating clinician.
4. Follow-up assessments should be periodically performed on all patients discharged to ensure compliance and continue documentation of progress.

MANAGEMENT GUIDELINES

A. RE-ASSESSMENT

Re-testing is required on computerized functional capacity testing unit, if available, at periodic intervals following the baseline testing procedures and the start of the exercise program.

B. STAGE 1 TO STAGE 2

1. Pain-free range of motion is at least 75% of normal arc.
2. Computerized functional capacity testing outcome measures are within 30% deficit of normal isometric strength.
3. Patient can perform 5 repetitions of isometric exercises through a pain-free range with minimal decrease in strength over the 5 repetitions.
4. Patient has been through at least 5 sessions of exercise in Stage 1.
5. When patient moves to Stage 2, the Stage 1 exercises are still performed at the ends of the range as the range progressively improves.

C. STAGE 2 TO STAGE 3

1. Patient must be able to perform 10 repetitions of manual resistance exercise through a range of motion with no pain and no appreciable decrease in strength over the 10 repetitions.
2. Computerized functional capacity testing (if available) show a deficit of 20% or less of normal strength.
3. Patient has shown progressive improvement in range of motion, with a 10% or less deficit of normal ROM.
4. Patient has performed Stage 2 exercises for at 1east 5 exercise sessions.
5. When moving to Stage 3 exercises, choose resistance exercises according to the nature of the case, patient tolerance, and patient ability.
6. Emphasis remains on regaining fu11 ROM as strength increases.

D. STAGE 3 TO HOME PROGRAM

1. Patient should have full, normal range of motion.
2. Patient should have pain free range of motion.
3. Computerized functional capacity testing (if available) shows less than a 10% deficit from normal strength.
4. Functional capacity for activities of daily living, work related activities, and/or sport-specific activities is managed or restored.
5. It may be possible to initiate a home program while still in Stage 3. However, the home program must be integrated and progress as supervised exercise needs decline.
6. Re-assessment of home program can be accomplished during regular office visits. This is a good time to suggest flexibility, strength training, aerobic conditioning, and nutrition on a whole body scale if it hasn't been addressed earlier in the rehabilitation process.