SIT STRONG SYSTEMS
CASE STUDY

Subject: **Therapeutic Chair Case Study**

Date: **February 1, 2012**

Length of Study: **Six Weeks**

Introduction:

This case study analysis is to determine that use of the Sit Strong Systems **t**herapeutic chair can help increase the quality of life for individuals that use the chair on a regular basis, especially for those ages 55 and older. This study will show that using the Sit Strong Systems chair will stimulate proprioceptors and promote joint and muscle efficiency, which in turn will increase strength, flexibility, mobility, and balance. When used correctly, the Sit Strong Systems chair can also be beneficial for the prevention and decrease of chronic pain conditions, all while providing a "stable" working environment.

Description of Study:

This case study included 12 total participants residing in an assistive living facility, and ranging in age from 70 to 98 years of age. There were 3 male participants and 9 females. The average participant age was 87 years old. The average male age was 83, and female average age was 88 years old. The duration of the study was 6 weeks, and the average frequency of workouts was 3 times per week. Individual exercise sessions averaged 30 minutes.

All therapeutic chair exercises and initial/post evaluations were administered by a licensed Occupational Therapist (OTR/L). All project participants were approved by the participants, their responsible parties, and the participants' physicians.

A combination of the following resistance exercises were chosen based on Occupational Therapist recommendation (7 for upper body and 3 for lower body):

1. Chest Press
2. Shoulder Press
3. Front Deltoid Raises
4. Incline Biceps Curl
5. Double Triceps Extension
6. Cross Body Side Laterals
7. Calf Press
8. Leg Press
9. Quad Lift

10. Shoulder Shrug

The pre and post participant evaluations included the following areas:

1. Oxygen level and heart rate at rest
2. Active range of motion measurements for:

    a. Shoulder flexion and abduction
    b. Elbow extension and flexion
    c. Hip extension and flexion
    d. Knee extension and flexion

3. Current resting pain levels in shoulder, elbows, hips, and knees
4. Standing static and dynamic balance
5. Muscle strength of shoulder, elbows and knees
6. Functional mobility throughout facility
7. Safety rating in current environment

Yellow tubing for light resistance was used for all upper body exercises. Green tubing for medium resistance was used for lower body exercises.

Results of Case Study:

Oxygen Level – Overall average oxygen levels improved for the group. Two specific residents improved from levels 96 to 99 and 94 to 96.

Pulse Rates (at rest) – Pulse rate improved on average from 4 to 6 beats per minute.

Active Range of Motion –

Shoulders: Flexion gains were 5 degrees to 55 degrees with an average increase of 17 degrees. Abduction gains were 1 degree to 60 degrees with an average increase of 20 degrees.

Elbows: - Average extension gains were 10 degrees. Average flexion gains were 29 degrees.

Knees – Average extension gains were 10 degrees. Average flexion gains were 20 degrees.

Hips – Measurements unchanged.

Muscle Strength –

Shoulders – Average flexion improvement was ½ muscle grade. Average abduction improvement was ½ muscle grade.

Elbows – Average flexion improvement was ½ muscle grade. Average abduction improvement was ½ muscle grade.

Hips – Flexion increase was ½ muscle grade. Extension was unchanged.

Pain (using pain scale of 0-10) –

Knees – Average decrease of pain was 3 points or 30%.

Lower Back – Average decrease of pain was 3 points or 30%.

Hips – Range of improvement was from 6 points to staying the same with average being a 3 point decrease.

Functional Mobility – One participant improved from using a rollator for safe ambulation to being independent without an assistive device.

Balance (Rated 0= unstable, 1=trace, 2=poor, 3=fair, 4=good, and 5=normal) -

Static Balance – all participants, excluding one, showed improvement.

Dynamic Standing Balance – Balance was maintained or improved in all participants.

Activities of Daily Living – Independent at the beginning and end of project.

Safety in Current Environment – Safety was maintained, and in most cases, improved.

Participant Comments and Statements:

1. "I feel better and stronger."
2. "These exercises make me feel better; helps me not pay attention to my ailments.
3. "I am stronger, and I feel safer when walking."
4. "I feel a little stronger."
5. "The chair helped me with movement and strength in my arms and legs."
6. "I noticed feeling increased confidence and safety when walking."

Conclusion / Summary:

Sit Strong Systems Therapeutic Resistance Chair has made a significant difference in these participants' lives. The biggest gains were noted in the areas of muscle strength, decreased joint pain, balance, and overall safety, all while providing a stable working environment. The facts show that by using the Sit Strong Systems chair on a regular basis, the user will improve strength, flexibility, and quality of life.

Independent Conclusion / Recommendation:

The Sit Strong Systems chair is a very useful and functional tool that provides easy access to resistance training. I would highly recommend the use of the chairs in many environments such as independent living centers, assisted living facilities, long-term care facilities (rehabilitation departments), hospitals, senior living centers, adult daycares, MR group homes, and for in-home use.

By using the chair on a regular basis, individuals can help prevent falls and the susceptibility to falls. Regular use of the chair would also help impaired physical function in frail and elderly persons and would contribute to the prevention and rehabilitation of orthopedic injuries. It can also be used safely with patients having mild cognitive impairment and mild dementia, given supervision. I feel the chair would be a therapeutically relevant recommendation for many patients and facilities.

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