



SilverFit Newton

The SilverFit Newton is an innovative touchscreen system providing clients interactive games for strength training. It can be connected to weight stack training equipment, such as a pulley or a leg press. The movement performed appears directly on the screen in the form of games, allowing the client to adjust and improve his movements. The SilverFit Newton settings can be tailored and allow both beginners and the more advanced to enjoy training sessions with the playful interface. The SilverFit Newton makes strength training entertaining and motivating, leading to more efficient rehabilitation.

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Strength training

How does it work?

The SilverFit Newton is connected to the training equipment by a sensor that determines the height of the stack of weights during a movement. The client's target point for each repetition is set during an initial calibration. When the client performs the exercise correctly and reaches the target point, the repetition is validated.

The therapist determines the amount of sets and repetitions as well as rest breaks, giving the client freedom to complete it independently. Each participant's training results can be saved in a personal folder, making it easy for the therapist to look back on. The interactive nature of the games distracts from the amount of sets and repetitions needed to complete the session. It aids in training effectively and on a regular basis.

Diverse range of exercises

Therapists can tailor each session to the client's needs. The system provides games and settings for a varying range of therapy goals including, amongst others:

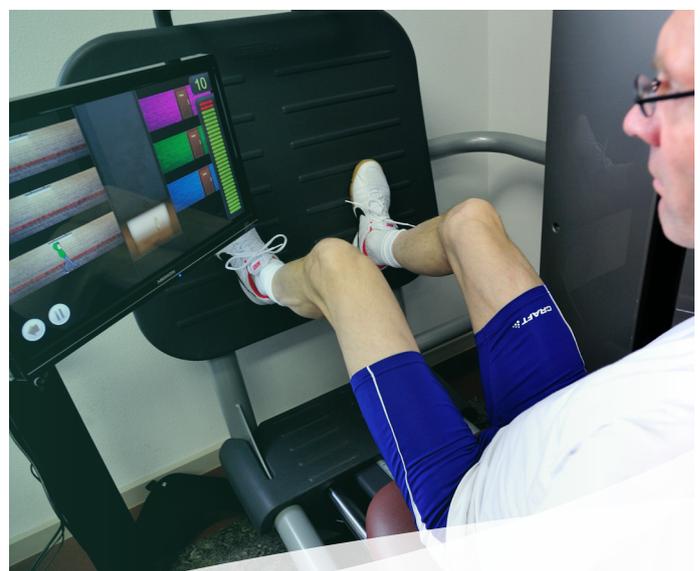
- Repetition based training: Performing a selected number of repetitions without time restriction
- Time based training: As many as possible repetitions are performed within a certain amount of time

- Rhythm based training: By adhering to the chosen pace of movement, be it symmetrical or asymmetrical, the participant trains concentrically and eccentrically. Maintaining an isometric hold throughout the range is also possible.
- Dynamic adaptability training: Dynamic adjustments to unexpected events in the game
- Measurements: Determine the 1 RM (1 repetition maximum) and available range of motion

Strength training in geriatrics

Strength training is an essential component of rehabilitation for many conditions in a hospital setting. Often, functional training is preferred to restore ADL functioning. However, initiating resistance training as soon as possible after surgery or prolonged bedrest counters the effects of immobilization and facilitates the rehabilitation.

The age-related loss of muscle mass and strength is a significant problem in the geriatric population. Training against resistance aids the performance of activities of daily living and the independence of the residents living in nursing homes. Regularly performing exercises against resistance delays the onset of these age-related changes and maintains mental sharpness.



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Scientific background

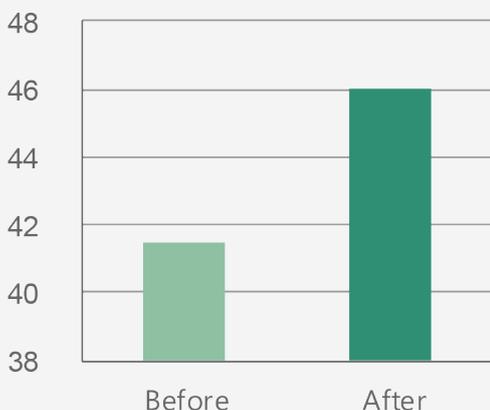
Improving functional mobility

Strength training significantly contributes to the functional mobility of the older adults. The systematic review of *Papa et al. (2017)* reports strength training, amongst other exercise modalities, helps standing up from a chair independently, moving forward, turning while walking as well as walking speed. Several other studies reported an improvement in static and dynamic balance after strength training (*Gonzalez et al., 2014; Granacher et al., 2009; Kahle et al., 2014*).

Improvement in balance of the older adults after strength training

Static balance before and after strength training

Functional Reach Test (cm)



Dynamic balance before and after strength training

Tandem Walk Test (number of steps)



Population: 40 males between the ages of 60 and 80 years (mean age 67 ± 1 yrs). Method: 3 days a week strength training at 80% of 1RM for 13 weeks. 1RM: 1 Repetition Maximum.

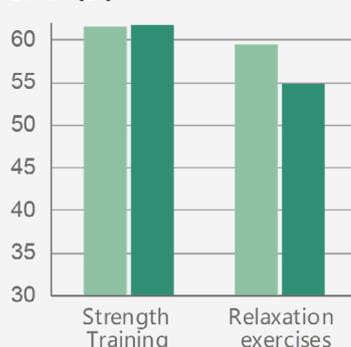
Source: *Granacher et al. (2009)*

Benefits of strength training during chemotherapy

Fatigue is one of the most common and limiting symptoms experienced by breast cancer patients during and after chemotherapy. In a study by *Schmidt et al (2014)* investigated the effect on quality of life when breast cancer patients did relaxation exercises in comparison to strength training. The study showed a marked improvement in quality of life and less fatigue when doing strength exercises as opposed to relaxation exercises.

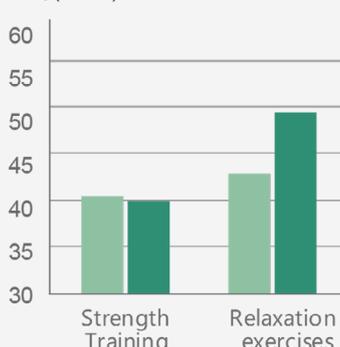
Quality of life

EORT-QLQ



Physical fatigue

FAQ (Score)



Population: 95 women with breast cancer undergoing chemotherapy (mean 52.7 years). Method: 2 times a week, 60 minutes strength training or relaxation exercises for 12 weeks. FAQ: Fatigue Assessment Questionnaire. EORT-QLQ-C30: European Organization for Research and Treatment of Cancer Quality of Life Questionnaire - Cancer 30.

Source: *Schmidt et al. (2014)*

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For an overview of all scientific research about SilverFit, [click here](#)

