BALANCE AND FALLS RISK IN CARDIAC REHABILITATION CLIENTS

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Background

Cardiac Rehabilitation (CR) is an established intervention for improving functional capacity as measured in metabolic equivalents. Falls risk factors are prevalent in clients enrolled in Phase II Cardiac Rehabilitation, however falls risk is not typically measured. Our clinic has observed improvements in balance and strength indicating that participation in CR may offer the additional benefit of fall risk reduction.

Purpose

The purposes of this project were:
Aim 1) to collect preliminary data to establish feasibility for conducting an interventional study for fall risk reduction within CR programs,
Aim 2) to determine the feasibility of recruiting CR programs, developing test measures with low burden, training staff and developing data collection protocols.

Design

Aim 1 Pilot study within a single CR program to measure balance and strength

Inclusion Criteria:

- Current enrollment in a CR program
- 60 years or older

Exclusion Criteria:

- Unsafe standing or walking

Aim 2 Survey CR programs in NC to determine participation of other centers

Procedures

Measurements

Aim 1. Preliminary data to reduce falls risk

We asked participants about their:

- history of falling,
- losing balance,
- changing activity, and
- use of assistive devices

All participants also performed standardized tests for identifying fall risk factors:

- 10 ft timed up and go (TUG)
- Single leg stand (30 sec)
- Repeated chair-rise test (# in 30 sec)

Aim 2. Determine feasibility

Survey sent to 68 CR programs to determine level of interest and basic program information

Intervention

- Cross section n=30 phase II
- Pilot outcome, N=15, 12-week CR Program Balance exercises incorporated into warm up and cool down protocols done in standing and progress challenge
- Examples-
  - Marching, high stepping, slow stepping
  - Cross reach/punch
  - Walking to include stepping, forward, back, side steps, grapevine
  - Walking while clapping hands front, back & overhead
  - Dance, Tai chi, Yoga

Data Analysis

- Descriptive statistics
- Paired T-tests

Results

Cross sectional data

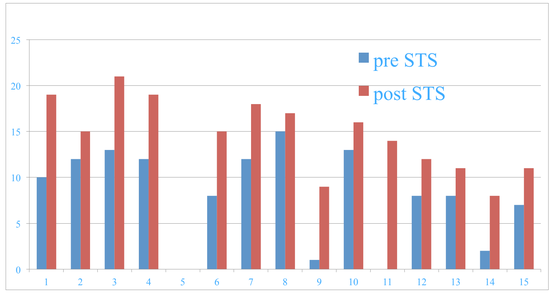
- N=30 M 17, F 13 Phase 2
- Age 60 - 92 (mean=70.7 ± 8.7 years)
- One hour of staff training was adequate for conducting the tests and establishing reliability
- Testing time each participant < 10 minutes
- Questionnaire
  - 8 participants reported a total of 13 falls,
  - 19 reported balance losses, 6 changed activity
  - 7 used assistive devices

Table 1: Measurements

Measure (n=30)	average	count
Chair stands (#)	9.3	N=12 clients at ≤8
Timed up and go (sec)	7.1	N=1 >14 s
Single limb stance (sec)	10.4	N=16 <10 sec

Small pilot intervention

- N=15 (12 M, 3 F) Phase 2
- Sit to stand # pre=8 , post 13.7 , P=.001



Survey Data from 20 CR Programs on Measurements Recorded

- 20 of 68 programs completed the survey
- Strength. Only six sites reported measuring strength (grip strength, sit to stand test, or arm curls)
- Balance. Six sites measured balance using one of four performance tests, two measured fear of falling, seven recorded assistive device
- Falls screening. Only seven sites conducted falls screening
- Musculoskeletal pain. Sixteen sites asked about intensity and location of musculoskeletal pain
- Activity Level. 16 sites asked for current activity level

Table 2: Survey Data on CR Exercise Components

Cooldown/Warmup	Frequency Reported
Walking	10
Stretching	9
Marching	8
Bike	5
Tandem Walking	2
Dance, Yoga, Tai Chi, etc	1-2

Summary/Conclusions

- Most clients were at risk of falling
- Survey of CR programs in NC indicated that about 26% were interested in participating in the study.
- Although many sites did not include balance tests and training, sites agreed these could easily be incorporated in the program
- Balance testing and training appear to have low burden and is feasible for CR
- Preliminary evidence that CR may reduce fall risk

References

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