Fit & Strong!
Guide to Successful Program Implementation

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I. Program Description

A. General description of program

- Fit & Strong! is an evidence-based physical activity/behavior change program that has been successfully implemented in multiple community-based settings. Participants are older adults who have lower-extremity joint pain and stiffness related to osteoarthritis or other lower extremity mobility challenges. Fit & Strong! blends a multiple component exercise program with group problem solving/ education using a curriculum designed to facilitate arthritis disease management through sustained physical activity (Hughes et al., 2004; Hughes et al., 2006). Before the end of the 24-session program, participants meet with the instructor to negotiate individualized exercise adherence contracts that foster ongoing maintenance of a balanced physical activity routine.

B. Program goals

- The overall goals are to help participants:
  - Maintain independent functioning
  - Reduce and manage arthritis symptoms
  - Gain a clear understanding of what osteoarthritis is and how physical activity that is tailored to the needs of persons with arthritis can help them manage arthritis symptoms
  - Learn a variety of stretching, balance, aerobic and strengthening exercises while gradually increasing the frequency, duration, and intensity of exercise over time
  - Incorporate physical activity into lifestyle by exercising three times/ week for 1 hour
  - Develop an individualized, tailored, multiple component physical activity program that is sustainable after the program ends

C. Reasoning behind the program design and elements

- Osteoarthritis (OA) is the most common condition affecting older people today and is the leading cause of disability among them (CDC, 2006; Hootman & Helmick, 2006).

- Lower extremity OA is a known risk factor for disability (Guralnik, Ferrucci, Simonsick, Salive, & Wallace, 1995; Jette, Branch, & Berlin, 1990), and lower extremity joint impairment caused by OA is a major mechanism through which disability develops (Dunlop, Hughes, & Manheim, 1997). OA causes limitation of mobility, as individuals with OA in their large lower extremity weight-bearing joints, minimize movement in order to reduce their pain. As older adults with OA become more sedentary over time, they experience significant decreases in strength and aerobic capacity compared to age matched peers (Minor, Hewett, Weber, Anderson, and Kay, 1989; Semble, Loeser, and Wise, 1990).

- This situation can be reversed or minimized. Older adults with lower extremity OA who engage in stretching, strengthening, aerobic, and health education programs experience functional and health-related improvements (Kovar et al., 1992; Lorig et al., 1996; Ettinger et al., 1997; Sullivan et al., 1998; Evcik et al., 2001; Van Baar et al., 2001; Thomas et al., 2002).

D. Description of appropriate participants

Sedentary older adults who experience lower-extremity joint pain and stiffness. A formal OA diagnosis is not required.

E. Core program components and activities

1. Exercise (60 minutes total)
    - Warm-up and stretching exercises (5-10 minutes)
    - Fitness walking or low impact aerobics (20 minutes)
    - Lower extremity strengthening using ankle cuff weights (upper body and resistance bands can also be added, but are optional) (approximately 20-30 minutes)
    - Cool-down exercises (5-10 minutes)
    - All exercises incorporate balance

2. Group Discussion/Health Education (30 minutes total)
    - A group problem solving component (additional 30 minutes) helps to increase participants' confidence in their ability to exercise safely and maintain physical activity over time.
    - Health Education/group problem solving improves arthritis symptom management and increases confidence to exercise safely with arthritis and maintain a balanced physical activity program over time and in the presence of barriers.
    - Discussions focus on topics related to osteoarthritis and physical activity, problem-solving around barriers, and motivating participants to develop a physically active lifestyle built on their preferences and access to PA resources.
3. Negotiated Adherence Contract
    - Negotiated Adherence Contract (Session 16) is completed by participants with instructor outside of class, is an individualized, tailored exercise plan to be continued by participant when the program ends

F. Length/ timeframe of program

24 sessions, each 90 minutes. Classes can be offered 3 times/week for 8 weeks or 2 times/week for 12 weeks. There must always be 1 day off in between class sessions, e.g., offering classes Monday, Wednesday, Friday is acceptable, but offering classes Monday, Tuesday, Wednesday is NOT acceptable.

G. Desired outcomes

- Increased self-efficacy for physical activity
- Increased adherence to physical activity
- Improved lower-extremity muscle strength
- Improved aerobic capacity and mobility
- Reduced joint pain and stiffness and improved function
- Improved anxiety and depression

H. Measures and evaluation activities

- Trainings are conducted online or by Fit & Strong! Staff and T/ Lead Trainers in order to maintain program fidelity. Participant outcome assessments are conducted at the beginning and end of the program. Measures include the following: demographics, Body Mass Index (BMI), common co-morbidities (Geri-AIMS), general health rating, lower extremity joint pain and stiffness (WOMAC), energy (SF-36) and engagement in physical activity (RAPA). Instructors and participants complete separate evaluations of the program.

II. Health Outcomes and Evidence Supporting Program Effectiveness

A. Efficacy

A large-scale randomized clinical trial funded by the National Institute on Aging/NIH tested the impact of Fit & Strong! among participants aged 60-92 years (average age 73 years). Preliminary findings comparing baseline measures taken prior to the Fit and Strong! program to measures taken 6 months later, found that participants who completed the program compared to a no treatment control group had significant benefits on:

- Increased adherence to physical activity
- Improved self-efficacy (SE) for exercise
- Reduced lower extremity joint stiffness (WOMAC)
- Decreased lower extremity joint pain (WOMAC)
- Improved aerobic capacity (6-minute distance walk)

(Hughes. S.L., Seymour, R.B., Campbell, R., Pollak, N., Huber, G., Sharma, L. (2004). Impact of the Fit and Strong! intervention on older adults with osteoarthritis. *The Gerontologist, 44*(2)*,* 217-228.)

Final findings from the same randomized clinical trial, comparing baseline measures taken prior to the Fit and Strong! program to measures on the complete sample 6 and 12 months later, found that participants who completed the program compared to a no treatment control group experienced the following significant benefits:

- Increased adherence to physical activity (56% increase in treatment group over baseline at 12 months)
- Improved SE for exercise
- Increased SE for adhering to exercise over time
- Reduced joint stiffness (WOMAC)
- Reduced arthritis pain (WOMAC and GERI AIMS)
  (Hughes, S.L., Seymour, R.B., Campbell, R.T., Huber, G., Pollak, N., Sharma L., Desai, P. (2006). Long term impact of Fit and Strong! on older adults with osteoarthritis. *The Gerontologist, 46*(6), 801-814.)

B. Effectiveness

A large effectiveness trial with approximately 500 participants found substantial maintenance of treatment effects for Fit and Strong! out to 18 months. We examined pre/posttest outcomes following participation in the 8-week Fit and Strong! program at baseline, 2, 6, 12 and 18 months. The study found significant increases in participation in physical activity at two months that were maintained at 18 months. This sustained increase in physical activity was accompanied by maintenance of significant improvements in:

- Lower extremity joint stiffness
- Lower extremity pain and function
- Lower extremity strength (timed-stands test)
- Mobility (6 minute distance walk)
- Anxiety and depression over the same time period.

These results are important because lower extremity strength and mobility are both risk factors for falls, and mobility is also an independent risk factor for mortality (Sherrington et al., 2008; Studenski et al., 2011). Further, walking speed is known to decrease 12-

16% per decade for persons 62 years of age and older (Himann et al., 2009). Our high risk population showed sustained increases over 18 months. (Hughes, S. L., Seymour, R. B., Desai, P., Campbell, R. T., Huber, G., & Chang, H. J.(2010) Fit and Strong!: Bolstering maintenance of physical activity among older adults with lower-extremity osteoarthritis. *American Journal of Health Behavior, 34*(6), 750-763.)

C. Test of Instruction mode (Physical Therapists vs. Certified Exercise Instructors)
We originally tested Fit & Strong! using licensed Physical Therapists (PT) as instructors but have transitioned to using nationally Certified Exercise Instructors (CEI) as part of an effort to translate Fit and Strong! into community-based settings. We used a two-group design to test the impact of this shift on participant outcomes. The first 161 participants to sequentially enroll in Fit and Strong! received instruction from PTs. The next 190 sequential enrollees received instruction from CEIs. All participants were assessed at baseline, at the conclusion of the eight-week Fit and Strong! program (2 months), and at 6 months. We found no significant differences by group on outcomes at eight weeks or 6 months. Participants in both groups improved significantly with respect to:

- lower-extremity strength (sit-stand test)
- aerobic capacity (6 minute distance walk),
- pain, stiffness, and physical function (WOMAC)

Participant evaluations rated both types of instruction equally highly, attendance was identical and no untoward health events were observed or reported under either instruction mode. We conclude that outcomes under the two types of instruction are remarkably stable. These findings justify the use of CEIs in the future to extend the reach of Fit and Strong!.
(Seymour, R.B., Hughes, S.L., Campbell, R.T., Huber, G., Desai, P. (2009). Comparison of two methods of conducting Fit and Strong! *Arthritis Care and Research*, *61*(7), 876-884.)

III. Requirements and Materials for Implementation

A. Instructor Requirements:

- Instructors must be identified by site program directors
- Current CPR certification a plus
- Experience working with older adults and/ or individuals with arthritis preferred
- 1 instructor/class required, 1 volunteer assistant/class recommended.
- Instructors must attend a training online or in-person led by Fit & Strong! staff and/or T/ Lead Trainers. In order to qualify for training, instructors must be either:
    1. A Fitness instructor certified by a nationally recognized fitness organization such as AFAA, ACSM, ACE, CIAR, ISSA, NASM, NCSF, NFPT, NSCA, YMCA. Certified exercise instructors are required to complete the online training or attend the in-person 8-hour training.
    2. Or a leader of another evidence-based program (MOB, CDSMP) with experience and comfort leading group-based exercise classes. Leaders of other EB programs are required to complete the online training or attend the in-person 8-hour training, and a 2nd training that consists of exercise science and safety and a teach-back of class elements.

B. Recommended class size

- 20-25 people at enrollment, class size typically drops off a bit.

C. Materials

1. Fit & Strong! Manuals (printed or electronic versions)

- One Fit & Strong! Instructor Manual (printed or electronic)
- A set of Fit & Strong! Participant Manuals (one per participant – can also use electronic versions)

2. Physical Activity Equipment:
   - Resistance equipment:
     - Ankle cuff weight – 10lbs per participant adjustable in half pound increments
     - Elastic exercise bands/ tubing with integrated foam handles
   - Floor mats for floor-based exercises- 24" wide, ½" Thick
   - Music

D. Space Requirements:

1. Large, open, unobstructed area for walking (perimeter of room, long hallways, outdoor space if weather permits)
2. Sturdy, non-rolling chairs for each participant, preferably without arms
3. Room for chair placement for each participant
   - Participants should be able to stand and extend both arms laterally
4. Class size- depends on room size and ability level of participants
   - A maximum of 20-25 participants per class
5. Storage space for equipment
6. Mirrors nice if available
7. Microphone is optional, but may be helpful in larger rooms

E. Program Costs

1. Equipment Costs

   The costs quoted here are estimates regarding the amount that providers seeking to replicate will have to pay for instructors, equipment and program manuals.

   The estimates are for the complete 24-session iteration of Fit & Strong! (24, 90-minute sessions held 2 or 3 times per week) and are based on the assumption the 20 persons will be enrolled in each iteration of the program.

   If site already has any of the following items available- exercise bands, mats, ankle weights- then it will not be necessary to purchase that item. The equipment costs are one-time up-front cost. Sites are encouraged to store equipment at the site, and re-use for subsequent iterations.

   Costs are subject to change, Fit & Strong! provides Manuals directly, but all other equipment is purchased through vendors. Fit & Strong! has relationships with vendors and receives discounted prices, but providers are not required to use these vendors.

One-Time Equipment Costs (for 20 participants)	
Ankle Weights $19.90/ each	$398.00
Exercise Bands $11.00 each	$220.00
Participant Manuals $35.00/ each	$700.00
Mats $15.00/ each	$300.00
Total Cost	**$1,318.00**

Total *Unit* Cost	**$95.89** per Fit & Strong! class participant

2. Certified Exercise Instructor Costs
   If your site already has a certified exercise instructor on paid staff or on a volunteer basis, these costs will not apply. If you need to hire a certified exercise instructor, note that the hourly rate for instructors varies by region. If your site uses a lead trainer from another EB program (CDSMP or MOB) these costs may not apply.

Breakdown of Instructor Hours	
48 hours	24 sessions @ 2 hours per sessions
4 hours	Develop one-on-one exercise contracts with class participants
52 hours	Total Hours
$1,352 *Total cost of instructor for program assuming $26/hour*	

IV. Recruiting Participants

A. Recruiting strategies

- Media
  1. Articles in local newspapers
  2. Advertisements in local newspapers
  3. Commercials on the radio
  4. Social media ads (Facebook, etc)
- Within your organization
  1. "Teaser"/demonstration classes
  2. Giving talks about Fit & Strong! during group meetings
  3. Informational tables at big events
  4. Posting flyers
  5. Articles in newsletters
  6. Recruiting older adult ambassadors who can reach other older adults
- Working with local partners
  1. Giving talks about Fit & Strong! during group meetings
  2. Informational tables at big events
  3. Posting flyers at partners' facilities (libraries, medical offices, etc)
  4. Articles and advertisements in partners' newsletters

B. Sample recruitment materials

Materials are available from the Fit & Strong! Team– please edit and make your own!

- Sample flyers
- Sample press releases
- Sample articles for newsletter inclusion

V. Training & Support Resources

A. Training Instructors

1. Training description: Trainings are conducted online or in-person by a Fit & Strong! Team member, T-Trainer, or Lead trainer. All trainees must complete the online or in-person 8-hour training. For trainees that have an evidence-based program background only, and no exercise certification, an additional half-day training is required. This training covers exercise science, exercise safety, and a role-playing teach back of program components.

2. The online/in-person 8-hour training involves:
    - A review of the background and development of Fit & Strong!
    - Findings from the efficacy, effectiveness, and dissemination studies
    - Detailed information and hands on experience with the three exercise components (flexibility, aerobic conditioning, strength training)
    - A description of the group problem solving processes that are key to the health education/ behavior change and negotiated physical activity contract component.
        - Including role playing activities for the exercise, group discussion, and adherence contract negotiation.
    - Addresses the purpose and process of obtaining participant outcome and program evaluations during the implementation of Fit & Strong!.

    The additional half-day training reviews:
    - The science behind the exercise components (flexibility, aerobic and strength training)
    - Provides more detailed instruction on all of the Fit & Strong exercises
    - Requires trainees to practice leading a mock exercise class and model adaptations for persons with painful joints or other health issues.
    - Characteristics of effective group exercise instructors

3. Training Locations: Trainings are held online or either at the implementing site or the F&S! office if in-person.
4. To begin the instructor training process, ask the Fit & Strong! for a link to the trainee form. This form collects a potential trainees contact information, certifications, EBP experience, and other relevant background/experience/education. The Fit & Strong! team uses this form to ensure the trainee has the minimum requirements to begin the instructor training process.

B. Lead Trainers

Lead trainers are responsible for leading the training of new instructors, conducting fidelity checks, supervising instructors, and providing ongoing support to the instructors and feedback to the Fit & Strong! team. All Lead Trainers begin as program instructors leading a Fit & Strong! Class. After being observed by a F&S! team member or another Lead or T-Trainer, they can be recommended to become a Lead Trainer. Upon the recommendation, he/she will be able to attend an 8-hour Lead Trainer Training held by the F&S! team or a T-Trainer. F&S! Staff tries to ensure that every geographic region identifies and trains a Lead Trainer within 6 months to a year of beginning to offer the program to facilitate sustainability.

C. Additional Support Resources for Instructors

- Network Meetings
  Network meetings are conducted online (Zoom) with Fit & Strong! Staff, providers and instructors for support. The meetings review new Fit & Strong! initiatives, share success stories, and problem-solve barriers or challenges that the providers and the instructors may encounter implementing the program. Also, the calls provide a chance for the Fit & Strong! staff to share new enhancements to the program.
- fitandstrong@uic.edu
- Website: www.fitandstrong.org
- Hotline: 312-413-9810

VI. Evaluation/Quality Assurance Protocol

A. Implementation Fidelity

1. Fit & Strong! Staff and/or T- and Lead Trainers conduct fidelity checks at each new Fit & Strong! site between weeks 2-4 of the program. Fidelity is evaluated using an implementation checklist. The purpose of the implementation checklist is to ensure that instructors are delivering the essential components of the program. Fit & Strong! team members recommend changes to the instructor delivering the program as needed when core elements are not being covered in entirety. Adaptations made by instructors are also noted. All adaptations are recorded and, if valuable, recommended for use in future implementations. If the adaptations are not appropriate, instructors are notified during and instructed to discontinue use of these adaptations.

B. Outcome Monitoring

1. <u>Participant pre- and post-test outcome assessment</u>
   The participant outcome assessment is a modified version of the assessments used during the original efficacy and effectiveness trials of Fit & Strong!. Using the same instrument enables us to compare outcomes across all of Fit and Strong! participants. The outcome assessment includes 5 key outcomes: participation in exercise, lower-extremity pain, lower-extremity stiffness, energy/fatigue, and self-efficacy for exercise. The participant outcome assessment is self-administered and Fit & Strong! instructors are responsible for distributing and collecting them on the first and last sessions of Fit & Strong!. The Fit & Strong! instructor training contains a module on the participant outcome assessment protocol.

Outcome	Measure/Scale	Reference
BMI (height and weight)	Self Reported	
Arthritis Management	BRFSS 2009 Questionnaire	
Arthritis Pain	Geri-AIMS Pain Scale	Hughes, S.L., Edelman, P., Chang, R.W., Singer, R.H., Schuette, P. The GERI-AIMS, reliability and validity of the arthritis impact measurement scales adapted for elderly respondents. *Arthritis and Rheumatism.* 1991; 34, 856-865. PMID: 2059233
Joint pain and stiffness	WOMAC	Bellamy N., Buchanan, W.W., Goldsmith, C.H., Campbell, J., & Stitt, L.W. (1988). Validation study of WOMAC: a health status instrument for measuring clinically important patient relevant outcomes to anti-rheumatic drug therapy in patients with osteoarthritis of the hip or knee. *Journal of Rheumatology, 15*:1833–40
Self efficacy for Exercise	Self Efficacy for Exercise Scale	Lorig, K. (1996). Outcome measures for health education and other health care interventions. Thousand Oaks: Sage Publications.
Energy and Fatigue	Subscale of SF-36	Ware, J.E. & Sherbourne, C.D. (1992). The MOS 36-item Short-Form Health Survey (SF-36): I. Conceptual framework and item selection. Medical Care, 30, 473-83 . McHorney, C.A., Ware, J.E. Raczek, A.E. (1993). The MOS 36-item Short Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. Medical Care, 31, 247-263.
Physical Activity	RAPA	Topolski TD, LoGerfo J, Patrick DL, Williams B, Walwick J, Patrick MB. The Rapid Assessment of Physical Activity (RAPA) among older adults. Prev Chronic Dis 2006;3(4):A118

1. <u>Participant program evaluation</u>
   All Fit & Strong! participants complete a program evaluation that assesses participant satisfaction with the physical environment, exercise program, group discussion sessions, manual, and overall satisfaction with the instructor and program.

2. <u>Instructor program evaluation</u>
   Instructors complete a survey via the secure login on the Fit & Strong! website that solicits information regarding how the class worked, satisfaction with support and manuals, any adaptations that they have made to the program, and any suggestions to improve implementation.

3. <u>Attendance</u>
   Instructors track and record participants attendance at every Fit & Strong! class.

4. <u>Data entry</u>
   Instructors or site administrative staff enters attendance, outcome assessments, program evaluations, and instructor evaluations via the Fit & Strong! website using a secure login. Sites can also send these materials to F&S headquarters for entry if time or resources permit. Providers have the opportunity to request reports of the pre-/ post- outcome analysis upon class completion. Contact the Fit & Strong! team to create a data entry account for you organization.

VII. Technical Assistance and Support Resources

A. Network Meetings

Network meetings are conducted online (Zoom) with Fit & Strong! Staff, providers and instructors for support. The meetings review new Fit & Strong! initiatives, share success stories, and problem-solve barriers or challenges that the providers and the instructors may encounter implementing the program. Also, the calls provide a chance for the Fit & Strong! staff to share new enhancements to the program.

B. Adopter Interviews/Debriefings

The Fit & Strong! Team may meet with program director and the instructor to receive feedback on the implementation of the program. Using a structured questionnaire with detailed questions allows for an in-depth description of the adopter's experience implementing the program. The adopter's willingness to maintain the program is also discussed.

C. Additional Resources

Instructors, providers, and participants have access to assistance through email, and a telephone hotline monitored by the T trainer, Lead trainers, and Fit & Strong! research team members. These individuals can contact Fit and Strong! team members to get answers to questions that arise during the implementation of the program. Access to the interactive portion of the website is conditional upon holding a license.

1. Email: fitandstrong@uic.edu
2. Hotline: 312-413-9810
3. Website: www.fitandstrong.org

VIII. Program License

The Fit & Strong! program is a registered trademark of and licensed by the University of Illinois Chicago. Licenses are processed through the University's Office of Technology Management (OTM). Providers complete a contract with the University and will be assessed the program license fee.

* Should you have any questions or concerns regarding licensure fees, please get in touch with the Fit & Strong! team who would be happy to assist you!