Lifestyle – integrated Functional Exercise program to reduce falls

Lindy Clemson
Professor Ageing and Occupational Therapy
NHMRC CD Research Fellow
Jo Munro
Physiotherapist

FACULTY OF HEALTH SCIENCES

Ageing, Work & Health Research Unit

What is LiFE?

Same same but different

Same exercises – different approach to doing them

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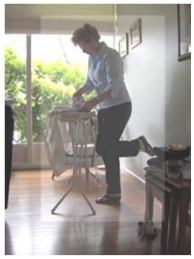
Aim of the LiFE program

To reduce falls and improve function in older people by having them perform LiFE activities that improve their balance and strength.



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RESEARCH

Integration of balance and strength training into daily life activity to reduce rate of falls in older people (the LiFE study): randomised parallel trial

OPEN ACCESS

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Fall reduction and functional outcomes

Reduced fall rate by 31% IRR = 0.69), n= 212

Improved balance and balance confidence

Improved functional capacity, participation, energy expenditure and perceived overall health status

(Clemson et al., British Medical Journal 2012)

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Balance, strength and balance confidence findings

	LiFE v's Control	effect size	Structured v's Control	effect size
Timed tandem walk	F=6.6 P = 0.002	0.42	F = 8.9 P<.0001	0.49
Balance hierarchy scale (8 level)	OR 1.5, wald 15.6 P<.0001	0.63	NS	0.29
R Ankle Strength	F=5.5 P=.005	0.40	NS	0.26
Balance confidence	F=5.52 P=.004	0.38	F=5.22 P=.006	0.37

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Measures of participation and function

	LiFE v's Control	effect size	Structured v's Control	Effect size
ADL (NHANES)	F = 15.01 P<.0001	0.62	F= 4.85 P=.008	0.36
Late Life Function index	F=21.05 P=.0001	0.73	F = 6.66 P= .04	0.41
Late Life Disability Index (freq)	F= 9.28 P=.003	0.49	NS	0.17
Paffenbarger PA index	F=15.01 p<.0001	0.62	F=4.85 P=.008	0.36
Health status (EQ-VAS)	F=4.46 P=.01	0.34	NS	0.06

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Mean adherence (percent of prescribed weekly exercise) over first 6 months

	n	Mean Proportion of adherence	
LiFE	107	47%	F = 4.69, p=.01
Structured	105	35%	
Control/gentle	105	47%	

Abella, M. PhD study

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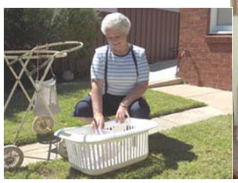
How do we achieve the aim?

These balance and strength activities are **embedded** into participant's daily tasks and routines. To do this people need to change their everyday habitual routines in how they do some things.



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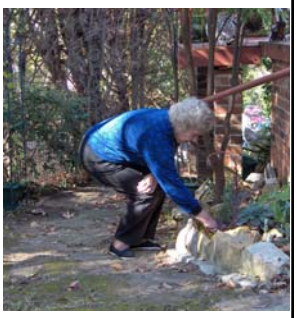

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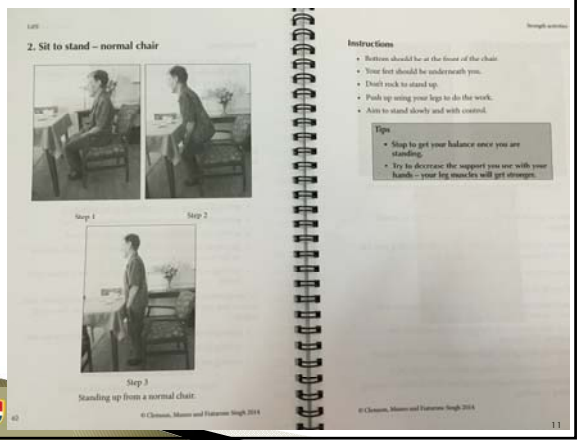

2. Sit to stand – normal chair

Instructions

- Bottom should be at the front of the chair.
- Your feet should be underneath you.
- Don't rock to stand up.
- Push up using your legs to do the work.
- Aim to stand slowly and with control.

Tips

- Stop to get your balance once you are standing.
- Try to decrease the support you use with your hands – your leg muscles will get stronger.

Step 1 Step 2

Step 3
Standing up from a normal chair.

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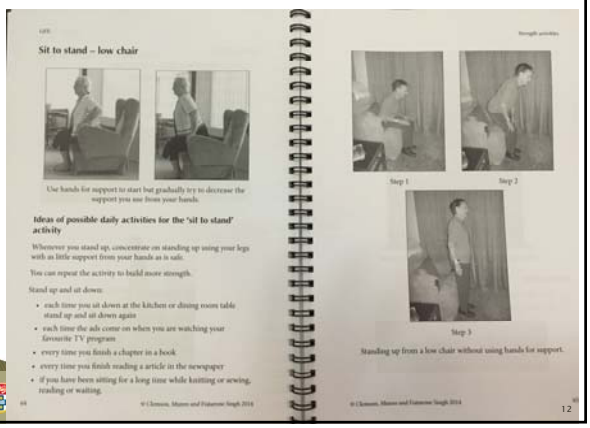

Sit to stand – low chair

Use hands for support to start but gradually try to decrease the support you use from your hands.

Ideas of possible daily activities for the 'sit to stand' activity

Whenever you stand up, concentrate on standing up using your legs with as little support from your hands as is safe.

You can repeat the activity to build more strength.

Stand up and sit down:

- each time you sit down at the kitchen or dining room table stand up and sit down again
- each time the ads come on when you are watching your favourite TV program
- every time you finish a chapter in a book
- every time you finish reading a article in the newspaper
- if you have been sitting for a long time while knitting or sewing, reading or waiting.

Step 1 Step 2

Step 3
Standing up from a low chair without using hands for support.

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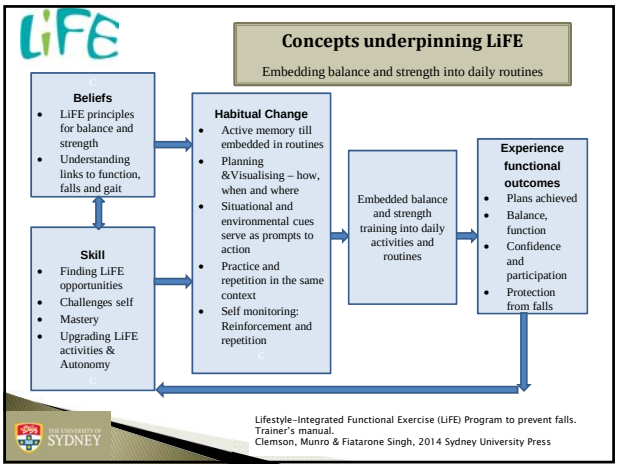

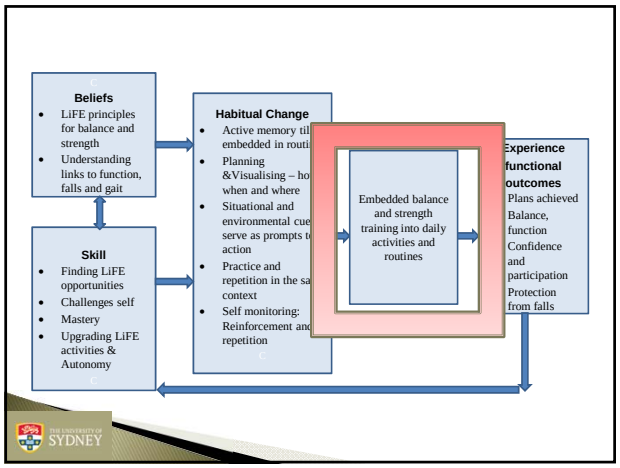

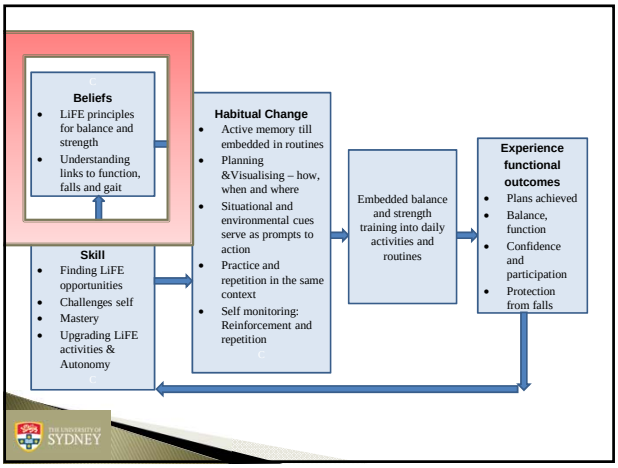

Beliefs – LiFE Balance Principles

To improve their ***balance*** they will need to practice activities that ***challenge their balance*** and keep progressing to ***more challenging*** balance activities.

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LiFE Balance Principles and Activities

Reducing your base of support	1. Tandem stand 2. Tandem walk 3. One leg stand
Shifting weight & moving to the limits of stability	4. Leaning side to side 5. Leaning backwards & forwards
Stepping over objects	6. stepping over objects

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Beliefs – LiFE Strength Principles

To improve their ***strength*** they will need to make their muscles work harder by ***loading their muscles***

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LiFE Strength Principles & Activities

Load your muscles

Increase the number of times you use a muscle

Move slowly

Use fewer muscles

Increase the amount of weight

1. Bend your knees
2. Sit to stand
3. On your toes
4. On your heels
5. Up the stairs
6. Walk sideways
7. Tighten muscles

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- VIDEO of Jo demonstrating some LiFE activities

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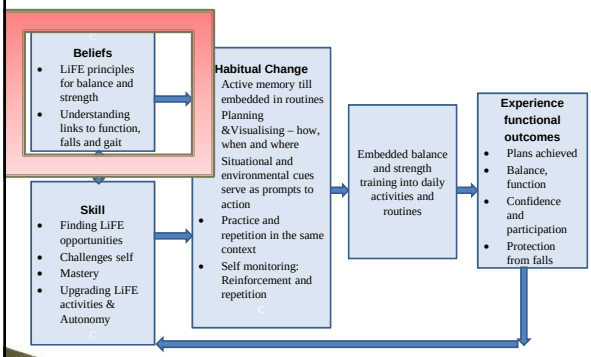

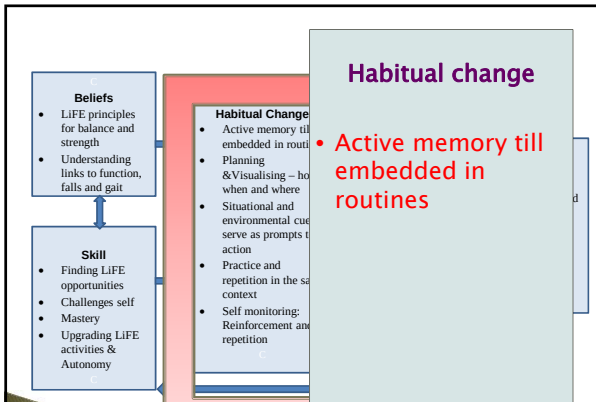

Habitual change

- Active memory till embedded in routines
- **Planning and Visualisig – how, when and where**

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Habitual change

Active memory till embedded in routines

Planning – how, when and where

Situational and environmental cues serve as prompts to action

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I moved the coffee to a higher shelf so that when I went to make the coffee it would remind me to go on my toes as I reached for the coffee.

LiFE

Habitual change

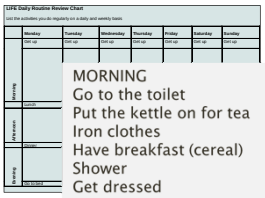
- Active memory till embedded in routines
- Planning – how, when and where
- Situational and environmental cues serve as prompts to action
- **Practice and repetition in the same context**
- **Self monitoring and repetitions**

Balance Principle	Balance Activity	Example of Daily Tasks How, when and where?	√ Tick if done
Decrease Base of Support	Tandem Stand		
	Tandem Walking		
	One Leg Stand		
Shift Weight and Move to Limits of Stability	Leaning Side to Side		
	Leaning Forwards & Backwards		
Stepping Over Objects	Stepping Forwards & Backwards		
	Stepping Side to Side		
Changing Direction	Stepping in Different Directions		

Skill

- **Finding LiFE opportunities**

Daily Routine Chart (DRC)



MORNING
Go to the toilet
Put the kettle on for tea
Iron clothes
Have breakfast (cereal)
Shower
Get dressed
Teeth, hair and makeup
Make lunch

Skills – challenging yourself, mastery , upgrading and autonomy

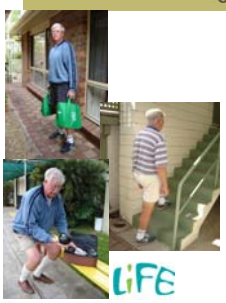
Looking for ways and opportunities to make the activities more challenging – more challenging level, more times, more places.

Upgrading is a continuous and ongoing activity for the participants

When an activity is 'mastered' – upgrade to a more challenging level or increase the situations in which it is done

Aim that they can upgrade themselves

Upgrading and increasing autonomy



Find opportunities to do a particular activity in more places

Make the activity more challenging

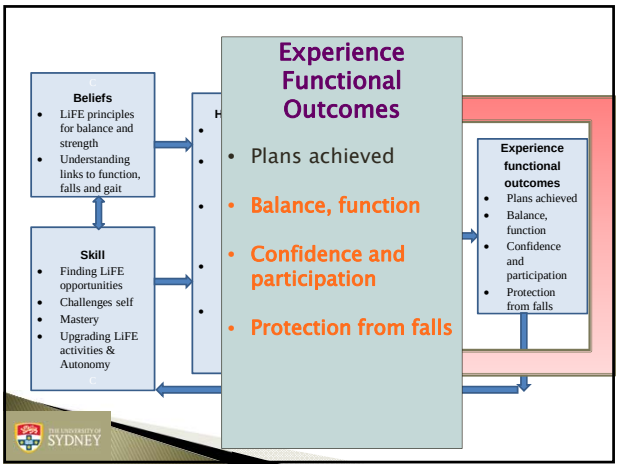
Changing the environment to provide opportunities to increase the challenges

Combine principles

Continuous and ongoing process

Need to be engaged and increasingly autonomous in planning what and where

LiFE



Teaching the program

- Teach balance and strength ***principles & key points*** **throughout the program**
- Discuss the relevance of activities to improving walking and decreasing the risk of falls
- Demonstrate as much as possible –correct form
- How often? – whenever have the opportunity
- Ownership of the session goals
- Increasing autonomy

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Opportunities exist in everyday tasks and routines to challenge balance and load muscles

I do all the same things - just changed the WAY I do them

I was looking for ways to make life easier by doing less - now I look for ways to make some things harder

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Other LiFE research

Translation into a restorative care program, (Burton 2015) West Australia

Group based LiFE with women at retirement, Ashe, Fleig (Fleig, 2013) Canada

Current projects

- PLATform –people with severe vision impairment NHMRC funded RCT (Kaey, Sydney) 2016-18 (Feasibility paper, 2015)
- Fidelity tools- development and reliability testing Maloney & Hamrick, Wisconsin, US)
- LiFE and Home safety – for people after stroke – pilot work (Dean, Sydney)
- LiFE and Home safety – CDC grant (Szanzin & Gitlin) Johns Hopkins, Baltimore
- PreVENTIT – Jorunn Helbostad Horizon Grant

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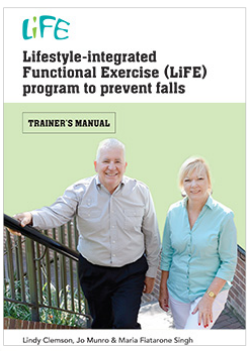

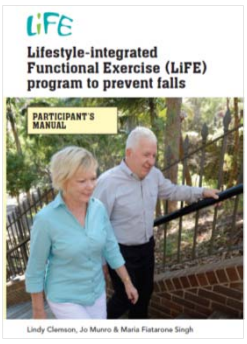

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LiFE Resources

Sydney University Press (SUP)

- LiFE Participant manual
- LiFE Trainer's manual
- LiFE " More LiFE Activities" *(to come)*

Purchase from

- Sydney.edu.au/SUP (Browse books, author, clemson)
- Amazon.com and Book Depository

Freely available to download from SUP:

- Life Assessment Tool
- Daily Routine Chart
- Activity Planner
- Activity Counter

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References

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- Lally, P., & Gardner, B. (2013). Promoting habit formation. *Health Psychology Review(7), S137 - S158. doi: 10.1080/17437199.2011.603640*
- Participant and therapist LiFE manuals available Sydney University Press Sup.info@sydney.edu.au (Also The Book Depository UK/Europe and Amazon.com US/Canada)

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