



Exercise Adoption and Adherence

How do we get patients to do their exercises?

Ben Kirk

2022 Sports Physiotherapy Masters Conference



Exercise prescription

=

Exercise occurring



Exercise prescription



Exercise occurring

Argent et al., 2018



**The optimal exercise prescription might
simply be the one the patient is most
likely to perform**

(Merry, 2022)

Case Study 1

- **Bonnie:**
 - 15 yo, female
 - Patella dislocation 6/12 ago → elected non surgical management
 - Lacking confidence in that leg
 - Goals: Confidence in leg, soccer



www-image 1, 22/10/2022

Case Study 2

- **Fred:**
 - 49 yo male, left knee OA
 - Sedentary work (accountant - long hours)
 - Weekly sport (social touch footy)
 - Goals: Keeping up with the kids, lose weight, continuing touch footy



www-image 2, 22/10/2022

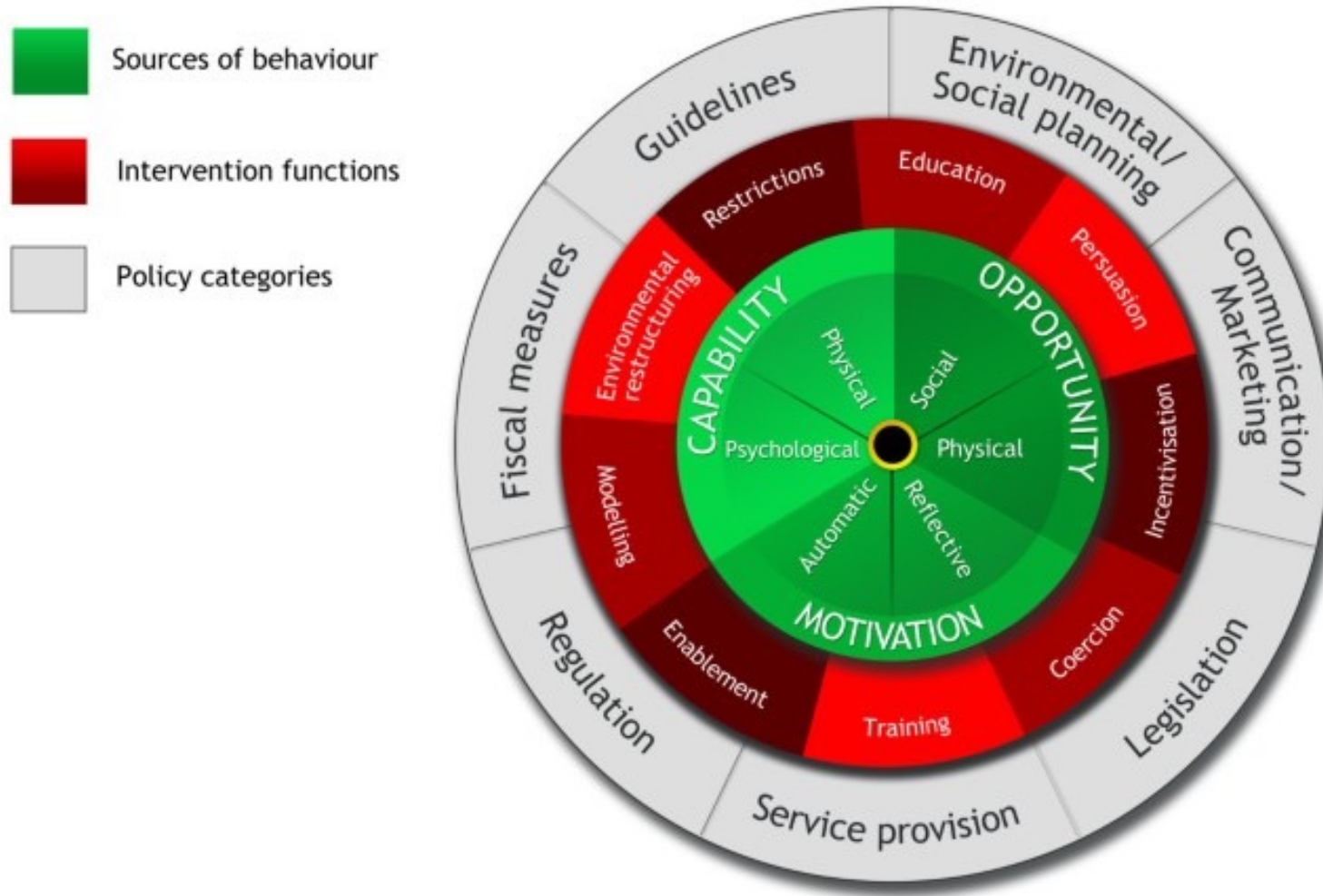


www-image 1, 22/10/2022



www-image 2, 22/10/2022

Behaviour Change Wheel









(Michie et al., 2011)




Behaviour Change Wheel









(Michie et al., 2011)




		Bonnie	Fred
	Physical		
	Psychological		
	Knowledge		
	Physical		
	Social		
	Time		
	Autonomic		
	Reflective		




		Bonnie	Fred
	Physical	✓	
	Psychological	✓	
	Knowledge	✗	
	Physical		
	Social		
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	Reflective		

		Bonnie	Fred
	Physical	✓	
	Psychological	✓	✓
	Knowledge	✗	
	Physical		
	Social		
	Time		
	Autonomic		
	Reflective		

		Bonnie	Fred
 <p>CAPABILITY</p> <p>Psychological</p> <p>Physical</p>	Physical	✓	
	Psychological	✓	✓
	Knowledge	✗	
 <p>OPPORTUNITY</p> <p>Social</p> <p>Physical</p>	Physical		
	Social	✓	
	Time		
 <p>MOTIVATION</p> <p>Automatic</p> <p>Reflective</p>	Autonomic		
	Reflective		

		Bonnie	Fred
	Physical	✓	
	Psychological	✓	✓
	Knowledge	✗	
	Physical		—
	Social	✓	✓
	Time		✗
	Autonomic		
	Reflective		

		Bonnie	Fred
	Physical	✓	
	Psychological	✓	✓
	Knowledge	✗	
	Physical		—
	Social	✓	✓
	Time		✗
	Autonomic	✗	
	Reflective	✗	

		Bonnie	Fred
	Physical	✓	
	Psychological	✓	✓
	Knowledge	✗	
	Physical		—
	Social	✓	✓
	Time		✗
	Autonomic	✗	✗
	Reflective	✗	✗

Behaviour Change Technique Taxonomy (BCTTv1)

- 93 behaviour change techniques
- Many options for therapists to engage

Page	Grouping and BCTs	Page	Grouping and BCTs	Page	Grouping and BCTs
1	1. Goals and planning 1.1. Goal setting (behavior) 1.2. Problem solving 1.3. Goal setting (outcome) 1.4. Action planning 1.5. Review behavior goal(s) 1.6. Discrepancy between current behavior and goal 1.7. Review outcome goal(s) 1.8. Behavioral contract 1.9. Commitment	8	6. Comparison of behaviour 6.1. Demonstration of the behavior 6.2. Social comparison 6.3. Information about others' approval	16	12. Antecedents 12.1. Restructuring the physical environment 12.2. Restructuring the social environment 12.3. Avoidance/reducing exposure to cues for the behavior 12.4. Distraction 12.5. Adding objects to the environment 12.6. Body changes
3	2. Feedback and monitoring 2.1. Monitoring of behavior by others without feedback 2.2. Feedback on behaviour 2.3. Self-monitoring of behaviour 2.4. Self-monitoring of outcome(s) of behaviour 2.5. Monitoring of outcome(s) of behavior without feedback 2.6. Biofeedback 2.7. Feedback on outcome(s) of behavior	9	7. Associations 7.1. Prompts/cues 7.2. Cue signalling reward 7.3. Reduce prompts/cues 7.4. Remove access to the reward 7.5. Remove aversive stimulus 7.6. Satiation 7.7. Exposure 7.8. Associative learning	17	13. Identity 13.1. Identification of self as role model 13.2. Framing/reframing 13.3. Incompatible beliefs 13.4. Valued self-identity 13.5. Identity associated with changed behavior
5	3. Social support 3.1. Social support (unspecified) 3.2. Social support (practical) 3.3. Social support (emotional)	10	8. Repetition and substitution 8.1. Behavioral practice/rehearsal 8.2. Behavior substitution 8.3. Habit formation 8.4. Habit reversal 8.5. Overcorrection 8.6. Generalisation of target behavior 8.7. Graded tasks	18	14. Scheduled consequences 14.1. Behavior cost 14.2. Punishment 14.3. Remove reward 14.4. Reward approximation 14.5. Rewarding completion 14.6. Situation-specific reward 14.7. Reward incompatible behavior 14.8. Reward alternative behavior 14.9. Reduce reward frequency 14.10. Remove punishment
6	4. Shaping knowledge 4.1. Instruction on how to perform the behavior 4.2. Information about Antecedents 4.3. Re-attribution 4.4. Behavioral experiments	11	9. Comparison of outcomes 9.1. Credible source 9.2. Pros and cons 9.3. Comparative imagining of future outcomes	19	15. Self-belief 15.1. Verbal persuasion about capability 15.2. Mental rehearsal of successful performance 15.3. Focus on past success 15.4. Self-talk
7	5. Natural consequences 5.1. Information about health consequences 5.2. Salience of consequences 5.3. Information about social and environmental consequences 5.4. Monitoring of emotional consequences 5.5. Anticipated regret 5.6. Information about emotional consequences	12	10. Reward and threat 10.1. Material incentive (behavior) 10.2. Material reward (behavior) 10.3. Non-specific reward 10.4. Social reward 10.5. Social incentive 10.6. Non-specific incentive 10.7. Self-incentive 10.8. Incentive (outcome) 10.9. Self-reward 10.10. Reward (outcome) 10.11. Future punishment	19	16. Covert learning 16.1. Imaginary punishment 16.2. Imaginary reward 16.3. Vicarious consequences
		15	11. Regulation 11.1. Pharmacological support 11.2. Reduce negative emotions 11.3. Conserving mental resources 11.4. Paradoxical instructions		

Non-Negotiables for Physiotherapists

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- Demonstration of the behaviour
- Behaviour practice/rehearsal
- Graded tasks

Are physical activity interventions for healthy inactive adults effective in promoting behavior change and maintenance, and which behavior change techniques are effective?
A systematic review and meta-analysis

Neil Howlett,¹ Daksha Trivedi,² Nicholas A Troop,¹ Angel Marie Chater^{1,3,4}

Translational Behavioral Medicine, Volume 9, Issue 1, February 2019, Pages 147–157,

Non-Negotiables for Physiotherapists

- Demonstration of the behaviour
- Behaviour practice/rehearsal
- Graded tasks
- Positive feedback
- Goal setting (patient led)
- Individualisation (Collado-Mateo et al., 2021, Jordan et al., 2010)

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Effectiveness of behaviour change techniques in physiotherapy interventions to promote physical activity adherence in lower limb osteoarthritis patients: A systematic review

Matthew Willett^{1,2*}, Joan Duda^{2,3}, Sally Fenton^{2,3}, Charlotte Gautrey⁴,
Carolyn Greig^{2,3}, Alison Rushton^{1,2}

PLOS ONE | <https://doi.org/10.1371/journal.pone.0219482> July 10, 2019

Self Monitoring

App based



Physical (diary vs other)



Self Monitoring- Patients Lie?!

- 95% of participants did not completed as prescribed
- 90% under prescribed amount
- Exercise reported in diary x 2.3 compared to electronic tracking

New exercise-integrated technology can monitor the dosage and quality of exercise performed against an elastic resistance band by adolescents with patellofemoral pain: an observational study

Michael S Rathleff^{a,b,c}, Thomas Bandholm^d, Kate A McGirr^a, Stine I Harring^a,
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JOURNAL OF ORTHOPAEDIC & SPORTS PHYSICAL THERAPY | VOLUME 48 | NUMBER 12 | DECEMBER 2018 | 943

Self-reported Home Exercise Adherence:
A Validity and Reliability Study
Using Concealed Accelerometers

- 20% overestimation accelerometer vs diary
- Low-moderate correlation between diary and accelerometer

Other Interventions

- **Social support** (Willett et al., 2019)
- **Social comparison** (Zuckerman & Gal-Oz, 2014)
- **Non-specific reward** (Willett et al., 2019)
- **SMS Reminders** (Bennell et al., 2020)

My Exercise Messages



www-image 3, 27/10/2022

Other Interventions

- **Wearables** (Brickwood et al., 2019)
- **Biofeedback** (Howlett et al., 2019, Riel et al., 2018, Willett et al. 2019)
- **Behavioural contract** (Nicolson et al., 2017, Willett et al., 2019)
- **Written/take home information** (Jordan et al., 2010)



www-image 4, 27/10/2022



Image 5: Morzia K & C Prabu.
2018

Bonnie - Capacity (self efficacy)

Demonstration of the behaviour

Behaviour practice/rehearsal

Graded tasks

Positive feedback

Individualisation

Goal setting (patient led)



Bonnie - Capacity (self efficacy)

Demonstration of the behaviour

Behaviour practice/rehearsal

- Supervised exercise sessions
- Self monitoring - app encourage self efficacy

Goal setting (patient led)



Fred - Opportunity (time)

Demonstration of the behaviour

Behaviour practice/rehearsal

Graded tasks

Positive feedback

Individualisation

Goal setting (patient led)



Fred - Opportunity (time)

- Self monitoring – app vs physical
- Biofeedback

Individualisation

Goal setting (patient led)



Take homes

Review

Patients limiting factors, their Capacity, Opportunity and Motivation

Do

The basics well! Demonstrate, progress, individualise and patient led goal setting

Consider

Further additions specific to patient



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

CREATE CHANGE

Thank you

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- Image 4: Access on 27/10/22 from: <https://cdn.mos.cms.futurecdn.net/dx9k47CBNt9YpZwBniaFQ.jpg>
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