

Health, Fitness, & Exercise on the Spectrum

Daniel Roth



AutismONTARIO

see the potential *voir le potentiel*



LEVEL UP
FITNESS ACADEMY

We'll get to the outline...but first some context

https://youtu.be/IW1_hsMusGQ

- There's a lot going on in this video
 - Prompts, cues, visual aids
 - Environmental set up
 - Modifications and scaling for individual skill
 - Group dynamics & modeling
- Unseen is the weeks of shaping and progressions
- But what's most important is how well the group runs and that everyone involved gets a great workout



Who are you and what is this all about?

- Previously, I'd kept my careers in Behavioural Science and Fitness separated
- Always wanted to reconcile the two because it seemed like such a glaring gap in the services available
- Incorporated in fall 2015, now see ~ 30-40 individuals with an exceptionality each week in our studio
- Train people 1:1, small group, large group,
- Work in collaboration with several community agencies



A problem

The majority of individuals with developmental disabilities get very little physical activity, carry high amounts of body fat, have poor fitness levels, and are at significantly higher risk of many health problems than the general population ¹



A Problem...more

- A full third of children with autism are obese (Body Mass Index >30) ² BMI – Body Mass Index
- Over half of all adolescents with autism are overweight or at high risk of becoming overweight (BMI >25-29) ³
- Children with autism are 40% more likely to be obese than children w/o autism ⁶
- Obese children are likely to become obese adults



Increased risks

- Coronary heart disease
- Type 2 diabetes
- Gastrointestinal (GI) disorder ⁷
- Cholesterol problems
- High blood pressure
- Sleep disturbances ⁹
- Metabolic syndrome
- Bone and joint problems
- Fatigue
- Irritability
- Back pain
- Anxiety, depression, mood problems ⁸



That's rough...why is that the case

- Not part and parcel of an autism diagnosis
- Result of environmental factors and difficulty navigating and accessing supports and services
- Use of antipsychotics is associated with weight gain⁵
- Other concerns often take priority
- Behaviours are often addressed in a vacuum
- Dietary pattern issues. Selectivity, sensitivities make dietary interventions more challenging¹⁰



Underserved or ignored

- Individuals with autism are far less likely to engage in regular physical activity ¹¹
 - Poor coordination and motor planning (don't have prerequisite skills for many activities)
 - Sensory issues
 - Low motivation
 - Social requirements
 - Lack of targeted services and qualified professionals
 - **Safety concerns**
 - A frequent mistake in our approach to physical education and activity for adults and youth that limits many would be participants



If it was a pill everybody would be taking it

- Benefits of exercise and physical activity in addition to optimizing body composition, staving off disease, and building strength, stamina and coordination
 - Improve sleep quality
 - Decrease anxiety and depression
 - Builds confidence
 - Reduces stereotypic behaviour ⁴
 - Reduces aggression⁴
 - Improves memory and cognitive function
 - Builds relationships



Warming the bench

- Often, sports are viewed as the only options for exercise
- For too many learners, the game, sport, and rules are far too abstract and complex – remember our population
- If we want people to move in beneficial ways why not just get them moving?
- For some people, sports and games are great ways to get exercise, socialize and have fun but they exclude a very large portion of our population and they are relegated to the sidelines.



Our approach

Focus on movement

- Time dedicated to getting fit should be spent...getting fit and in near constant motion
- Want a balanced approach that incorporates a variety of stimulation for the best training effect
 - Heavy pushing/pulling/carrying/lifting to build strength
 - Running, cycling, jumping, climbing, moving to boost cardiovascular fitness
 - Crawling, throwing, catching, balancing to promote coordination



Safety first

Modifying the type of equipment we use

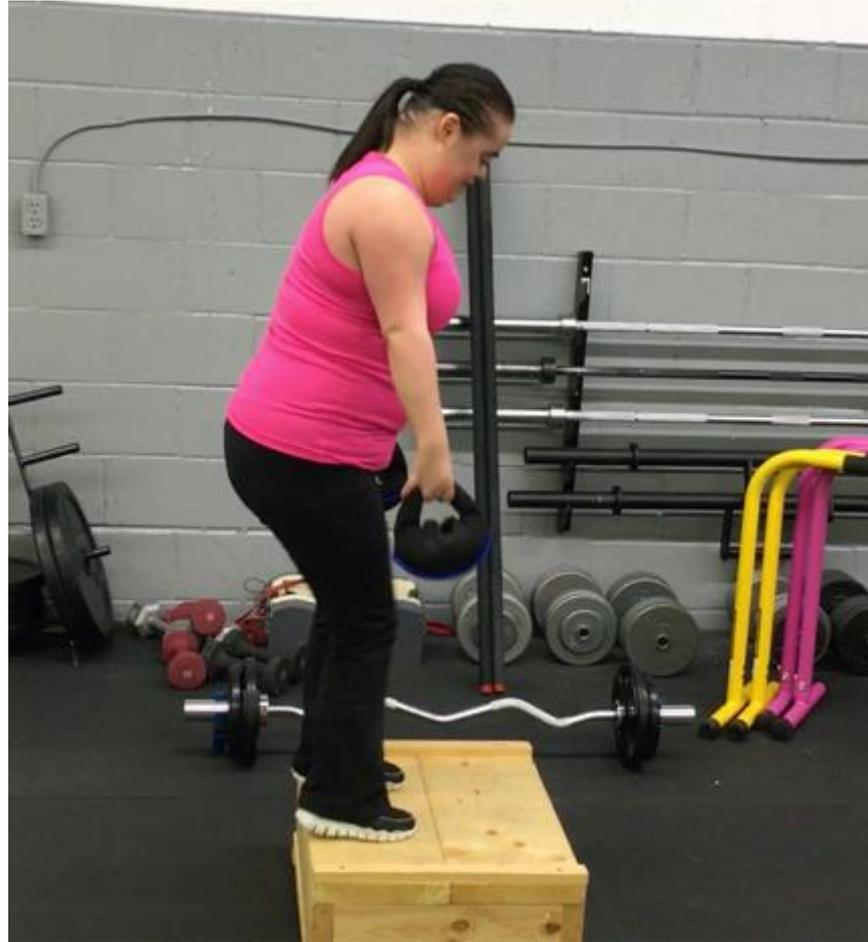
- Options that minimize risk but can still be effective and provide meaningful feedback to the user

Modifying the types of exercise we select

- Options that can be done right away with little teaching that carry very little risk
- Options that allow scaling and progression
- Video examples
- Building the plan based on need within a safe framework



Safe but heavy



Supplements!

We take a behavioural skills training approach similar to any other skills we might teach

- Instruction-modeling-rehearsal-feedback
- Supplement our instruction as needed – visual aids, schedules, floor markers, token boards
 - It has to be clear – especially if we're running a group
- Feedback is mainly reinforcement at the start
 - Are you moving now and you weren't before?
Awesome! Correcting form can wait



Globo gym!

- Put yourself into the shoes of someone you know/support
- Visualize this experience



Can you figure out what's expected here?

- Shout it out...or not





EXIT



H2 04:21

LEVEL UP
FITNESS ACADEMY







Don't stop moving!

Shaping is a key process

- In a sport or game if someone makes a mistake or doesn't understand where to go or what to do it disrupts the whole game and everyone has to stop
- With movements, we can successively shape better performance and never have to interrupt individual or group performance.
- Who cares if you pushed the sled 60 ft with your arms bent instead of straight – let's reinforce you moving and work on form later.





Reinforcement

Reinforcement is key

- Let's make it fun – why else do it?
- Lots of options and ways to embed reinforcement
- Many won't need any external reinforcement
- Some will need very dense schedule
- Ultimately, exercise will be paired well



The weightmobile



3-2-1 rule

- As a general rule we use the 3-2-1 principle:
 - 30 minutes of cardiovascular activity
 - 20 minutes of strength work
 - 10 minutes of mobility and flexibility
- In reality, there is no clear delineation – we often blend these three together & program design is always based on goals
 - Video examples



Graduating

- Once someone has built a decent base level of fitness, developed their coordination and motor execution, this should be time to try them out in a sport instead of while they are deconditioned, lack confidence, and are most likely to have difficulty assimilating.
- Some clients take what they learn from us and then are more comfortable training in a more public community gym.



What does it look like?

Examples of:

- Modifications & supports
- Progress
- Reinforcement & motivation
- Different structures
- Environmental set up
- Awesome people doing amazing things

<https://youtu.be/DMqTGJOJc-g>



Assessment

This may be challenge

- Depends on communication ability– RPE (rate of perceived exertion), talk test, discrete trials
- May have to rely on outside measures – blood panels, resting BP (blood pressure), anthropometric data
- Depends on what the goal is for the individual
- How important is this? For the individual may not be tremendously useful info but for research it could be very insightful
- How do other behavioural measures correlate to not only processes (worked out 1x week for 8 weeks) vs outcomes (improved lactate threshold by 15%)



Some group results



How effective?

Research

- We know it can be an effective way to reduce many problem behaviours but:
 - How big is the effect
 - Are all problem behaviours attenuated or only some
 - How transient is it
 - How does frequency/intensity relate to outcome
 - What else could be measured?



Keep it simple

- Very accessible design
- Baseline suite of behavioural measurements
- Baseline fitness levels
- Reassess post-training

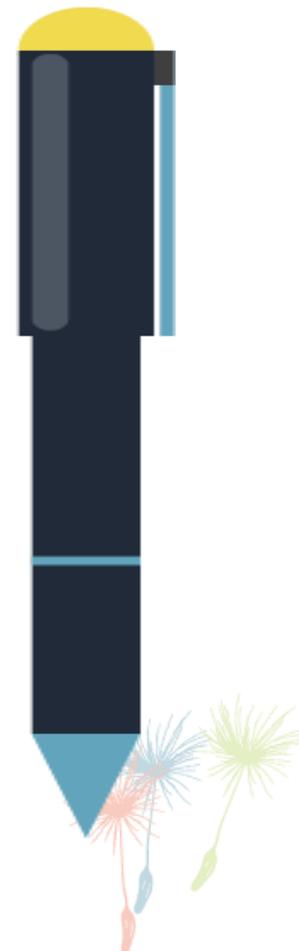
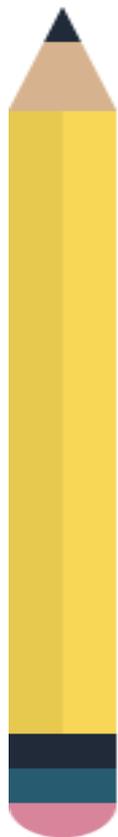


What you can do

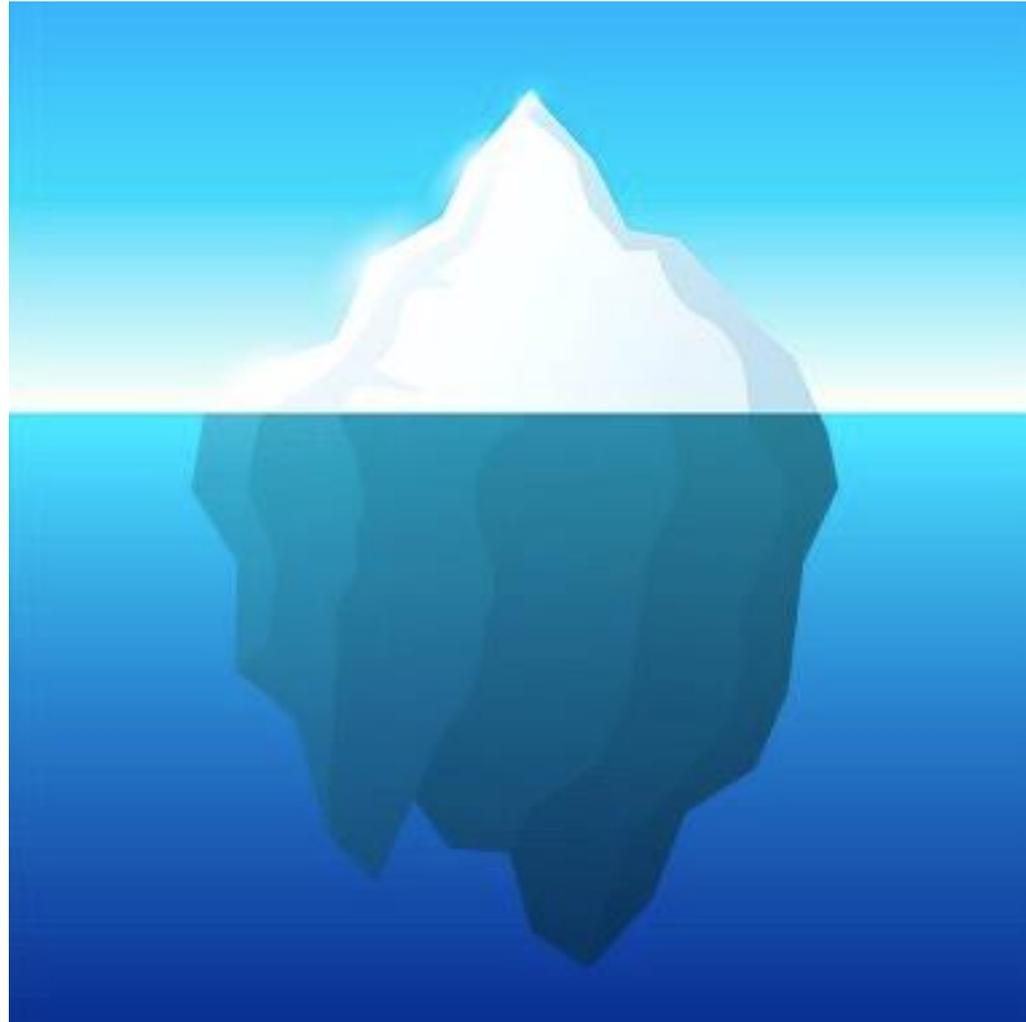
- Rethink exercise's role.
 - It's not a chore, or something that might be tried once all the other pieces are in place.
 - It could be something that helps across a number of domains and allows all the other pieces to fit better



It's on the list



You've seen this before



What you can do

- Be patient
 - Start slow, this is something we want to become a lifestyle. Don't do too much too quickly. Find the areas that can be shaped. Picture where you want to take it and have a plan to get there.
 - Have faith – it doesn't happen overnight. I wish I had videos of all my clients when they first started – the difference now is night and day but it took time, planning, and patience



What you can do s'more

- Be more fun! – you're fun right?
 - Get creative, we will need motivation, especially at first
 - You've just seen tons of examples
- Make it safe
 - For everyone involved
 - An injury or unpleasant experience at the early stages of exercise adoption may have disastrous effects
- Focus on moving now and worry about perfection later
 - Are they moving more now than they were before? Good, keep going.
 - Shape it up



What you can do even s'more

- Scope out a facility or professional who might be a good fit
 - People are more receptive than you might think and businesses want to be inclusive
 - Lots of trainers are great with people & individuals with ASD are people
 - Some settings are better than others
 - You won't know unless you try
- Look for ways to embed it into daily life
 - Non-exercise physical activity (NEPA): Driving somewhere?
Walk, park far away
 - Make a contract
 - Set an example



You, the change agent

- Want to start seeing more people on the spectrum in an exercise setting?
- Let's make it happen
- When I tell people what I do - people often have a light bulb moment and realize how valuable it is.
- Whatever hesitations may have been holding people back can be influenced by people like you setting an example
- Advocate for the person you support and use what you know to *create* an opportunity



Opportunities are out there

- Look for other pairings that might work well
 - Baking workshops example
- Volunteer opportunities
 - My apprentice
- People are generally good & are more receptive than you might think



References

1. NCHPAD. "Developmental Disability and Fitness: NCHPAD - Building Inclusive Communities." National Center on Health, Physical Activity and Disability (NCHPAD)
2. Phillips, Keydra L., Laura A. Schieve, et al.,. "Prevalence and Impact of Unhealthy Weight in a National Sample of US Adolescents with Autism and Other Learning and Behavioral Disabilities." *Maternal and Child Health Journal* *Matern Child Health J* (2014): 1964-975. Print.
3. "Sports, Exercise, and the Benefits of Physical Activity for Individuals with Autism." *Autism Speaks*. Web. 28 Oct. 2015.
4. Lang, Russell, Lynn Kern Koegel, Kristen Ashbaugh, April Regeister, Whitney Ence, and Whitney Smith. "Physical Exercise and Individuals with Autism Spectrum Disorders: A Systematic Review." *Research in Autism Spectrum Disorders*: 565-76. Print
5. Yoon, Y., Wink, L. K., Pedapati, E. V., Horn, P. S. & Erickson, C. A. Weight gain effects of second-generation antipsychotic treatment in autism spectrum disorder. *J Child Adolesc Psychopharmacol*. 26, 822–827 (2016)



References

6. Hill, A. P., Zuckerman, K. E. & Fombonne, E. Obesity and autism. *Pediatrics*. 136, 1051–1061 (2015).
7. Ferguson, B. J. et al. Psychophysiological associations with gastrointestinal symptomatology in autism spectrum disorder. *Autism Res*. 10, 276–288 (2017)
8. Wallace, G. L. et al. Real-world executive functions in adults with autism spectrum disorder: profiles of impairment and associations with adaptive functioning and comorbid anxiety and depression. *J Autism Dev Disord*. 46, 1071–1083 (2016).
9. Levin, A. & Scher, A. Sleep problems in young children with autism spectrum disorders: a study of parenting stress, mothers' sleep-related cognitions, and bedtime behaviors. *CNS Neurosci Ther*. 22, 921–927 (2016)
10. Meguid, N. et al. Dietary patterns of children with autism spectrum disorder: a study based in Egypt. *Open Access Maced J Med Sci*. 3, 262–267 (2015).
11. Healy, S., Haegele, J. A., Grenier, M. & Garcia, J. M. Physical activity, screen-time behavior, and obesity among 13-year olds in Ireland with and without autism spectrum disorder. *J Autism Dev Disord*. 47, 49–57 (2017).

