

**The Fitness Guide For Individuals With Down Syndrome**  
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**This Guide is not meant to substitute medical advice or treatment. Rather, this is meant to give parents, guardians, educators and others who work with individuals with Down Syndrome an educational resource on how to improve the fitness for those with Down Syndrome. You should consult a Physician if you are needing medical attention or advice. You should also seek medical advice before starting a new physical activity regiment.**

### **Introduction**

Exercise is an essential part of living a healthy and fulfilled life for everyone. However, for individuals with Down Syndrome, this statement is especially true. This guide will provide you with the knowledge of how important it is for frequent exercise to take place for those with Down Syndrome, how to implement the correct exercises for individuals with Down Syndrome and how to notice improvements and regression in exercise performance. This guide will be especially helpful for parents, Coaches, Teachers, Educational Assistants, Principals and others who work with people with Down Syndrome. This educational resource will have a specific focus on teenagers and adults with Down Syndrome, however, children could also benefit from some of these exercises too.

People with Down Syndrome face a number of challenges on a daily basis. While social issues and systemic barriers are essential to understand in order to help our friends with Down Syndrome overcome these issues, this guide will focus on the physical challenges that these individuals face in order to improve their health and wellbeing. The terms health and wellbeing must be explained further.

The goal of this guide is to improve the health and wellness of people with Down Syndrome. However, I must be more specific about health and wellness. The exercises and strategies in this guide will help improve the mental and physical health of individuals with Down Syndrome. The improvement of mental health comes with exercise itself (Sharma, Madaan & Petty, 2006). Various aerobic exercises have been proven to reduce anxiety and depression (Guszkowska, 2004). These exercises that have proven to reduce anxiety and depression are aerobic exercises like running, walking, dancing or swimming (Guszkowska, 2004). We will be incorporating many such exercises and more in order to improve the mental health of individuals with Down Syndrome.

Furthermore, physical health will also be a major point of improvement to help those with Down Syndrome (Paul et al., 2019). Regular exercise is essential for improving muscle strength, aerobic ability and cardiometabolic risk profile as well (Paul et al., 2019). Furthermore, a 2012 study concluded that the use of regular Wii usage can improve motor skills and postural control of children with Down Syndrome (Berg, et al, 2012). The use of various specific

exercises, will help you implement effective exercise programs for your child, friend, client or athlete with Down Syndrome.

### **Cardiovascular Exercise - aerobic**

Aerobic Exercise is essential in maintaining good heart health. Aerobic exercise causes an increased heart rate and breathing rate (How much exercise is optimal for heart health? 2016). These types of activities are exercises such as jogging, walking, cycling, running, swimming, hiking, dancing or cross country skiing. These exercises work your cardiovascular system but do not leave you out of breath in a short period of time such as sprinting.

### **Strength Exercise - anaerobic**

Anaerobic exercises are also important for the maintenance of good health. These exercises use shorter bursts of energy. These activities leave you breathing heavily quickly. They are also known as high intensity exercises. Some anaerobic exercises are weightlifting, sprinting and jumping.

### **Flexibility**

Flexibility is essential in the maintenance of good health. Stretching and yoga are essential in the maintenance of healthy muscles and joints.

This guide will provide you with exercises and activities to support Athletes with Down Syndrome, improve all three of these categories and more.

## Exercises for Younger Athletes

### Sit up ball throw

This exercise is designed to help athletes build core strength and stability. It is also helpful in building hand-eye coordination as well. The athlete and coach will sit a fair distance apart. The coach will lay back, putting their feet to the sky, sit up and throw the basketball to the athlete. The athlete will then catch the ball, lay back, putting their feet to the sky, sit up and throw the basketball to the coach. This should be repeated as many times as possible to build the core strength of the athlete.

### Foot placement

Footwork and agility is essential in developing competent athletes. The use of the following varied drills will help improve this skill in athletes.

When athletes are ready, they can **run** through hula hoops as fast and safely as possible. This drill works on agility and foot placement by placing 6-10 hula hoops in an uneven line. Once competent in this drill, athletes can do **two foot hops** through scattered hula hoops, which is a great drill from jumping abilities. Have athletes do two foot hops as fast as they can throw each hoop. When athletes are competent in this they can do **single foot hops** through these hoops.

### Handkerchief throw and catch

This exercise requires a handkerchief and a one-on-one time with the athlete or a small group of athletes. The coach will hold a handkerchief out of reaching distance over the head of the athlete. The coach will drop the handkerchief and the athlete will catch it before it touches the ground. This exercise is to be first done with two hands, then one hand. It is important that the athletes practice with each hand as equally as possible.

Once the athletes have mastered this skill they can turn their back to the coach. The coach will then stand about 3 to 5 feet away from the athlete. The coach will throw the handkerchief in the air and say “go” at the same time. The athlete will turn around and try to catch the handkerchief before it touches the ground. You can also use multiple handkerchiefs for more advanced athletes.

### Red light Green light

This drill is helpful in improving running abilities and ability. The athlete will stand at one end of the workout space. The coach will stand at the other end of the workout space with a red flag and a green flag. When the coach raises the green flag and says “green light” the athlete will run towards them. When the coach raises the red flag and says “red light” the athlete will stop as quickly and safely as possible. This exercise will support the ability to stop and start for athletes.

## **Core Exercises for all athletes**

### **Bridge Exercise**

Athletes will lay on their backs with their knees bent and their feet flat on the floor. They will use their glutes to push through their heels to raise their hips to the sky. Their legs and torso should flat. Athletes can hold this for a certain period of time or move their hips up and down slowly to build strength in their core and glutes. The glutes should be doing the most work, not the quads. This exercise is a great way to increase core strength and improve posture.

### **Technical Stand Up**

When athletes have become proficient in the glute bridges, they can work on their Technical Stand Up. A technical stand up is a great core strength building exercise. This is an exercise used in Brazilian Jiu Jitsu quite frequently. For this exercise, the athlete will start on their back with their knees bent and their feet flat on the floor. They will put their weight on their right foot and left shoulder/arm. They will then slide their left leg out from under them and plant it on the floor so that both feet are now on the floor. From here they stand up. Athletes can repeat this on the other side, however many times works best for them.

### **Bicycle Exercise**

Athletes will lay on their back. They will move their legs as if they are riding a bicycle. When athletes become more proficient in this they can extend their leg to the floor, touch their heel to the floor and back. This extends their bicycle kick and improves core strength. The reason this exercise is so essential is due to the fact that it extends the psoas muscles. The psoas muscles are essential parts of maintaining good posture and maintaining positive spine health.

### **Russian Twists**

Athletes sit on the floor with a ball in their hands. To start, you can use a tennis ball and work up to heavier balls like volleyballs, basketballs, medicine balls. For this exercise, athletes can start sitting up with their heels touching the ground. They will hold the ball with two hands and touch the ball to the floor, beside their hip. They will then carry the ball to the other side of their body and touch the floor, beside their other hip. Bringing the ball from side to side builds core strength and stability. The more proficient athlete can keep their feet off the ground to make this exercise more challenging. The heavier the ball the more challenging as well.

### **5 Day Exercise Guide**

Use these five days worth of exercise to get yourself back into shape and build some healthy habits! Using this guide will help you compete in a variety of sports and activities! Don't forget to include a friend or family member. It is always more fun to work out with someone you know instead of working out alone!

## **Day 1 Exercises**

### **Warm up**

Go for a walk! Set a goal for how far you would like to walk and get moving!

### **Strength**

Squats

3 sets of 10

Pushups

3 sets of 10

Speed

5 wind sprints

### **Mobility**

Tennis ball roll

The athlete will start standing beside a Coach. The Coach will roll the tennis ball at an unpredictable speed. The Athlete will run to grab the tennis ball, and bring it back to the line and hand it to the Coach as quickly as they can. Repeat this 5-10 times, depending on the ability of the Athlete.

### **Cool Down/Coordination**

Throw and catch - tennis ball

This will bring the heart rate down after the previous exercise and improve the hand eye coordination of the athlete.

### **Stretch**

Hold each stretch for 10 seconds. Make sure to not stretch too far or you may hurt yourself.

- Side lunge
- Front Lunge
- Seated hamstring stretch
- Butterfly
- Standing quad stretch

## **Day 2 Exercises**

### **Warm up**

Stairs. Walk up and down a flight of stairs 5-10 times, depending on the ability of the Athlete.

### **Strength**

Lunges

4 sets of 10 (each leg)

Dips

3 sets of 10

### **Speed**

6 wind sprints

### **Mobility**

Foot Placement Drill

Put hula hoops in two rows, right beside each other for this drill. The Athlete will step in each hula hoop until the end of the row. When the Athlete becomes proficient at this, they can do two foot hops through the hula hoops or one foot hops through the hula hoops.

### **Cool Down/Coordination**

Throw and catch - Football

This will bring the heart rate down after the previous exercise and improve the hand eye coordination of the athlete.

### **Stretch**

Hold each stretch for 10 seconds. Make sure to not stretch too far or you may hurt yourself.

- Arm Circles (Forwards and backwards)
- Side lunge
- Front Lunge
- Seated hamstring stretch
- Butterfly
- Standing quad stretch
- Ankle circles



### **Day 3 Exercises**

#### **Warm up**

Mountain Climbers

Do 30 Mountain Climbers to warm up for the workout!

#### **Strength**

Stair Step Ups - Step up two stairs to improve leg strength. Use the same leg 10 times and then the other leg for 10 times. Repeat 4 sets.

4 sets of 10 (each leg)

Pushups

5 sets of 5

#### **Speed**

8 wind sprints

#### **Mobility**

Side Steps

Place two pylons approximately 20m apart. The athlete will side shuffle to the cone and back, facing the same way each time. Repeat 3-5 times depending on the ability of the Athlete.

#### **Cool Down/Coordination**

Throw and catch - Frisbee

This will bring the heart rate down after the previous exercise and improve the hand eye coordination of the athlete.

#### **Stretch**

Hold each stretch for 10 seconds. Make sure to not stretch too far or you may hurt yourself.

- Arm Circles (Forwards and backwards)
- Side lunge
- Front Lunge
- Seated hamstring stretch
- Butterfly
- Standing quad stretch
- Ankle circles
- Wrist Circles

## **Day 4 Exercises**

### **Warm up**

Jogging. Go for a jog to warm up for the workout. Ensure that you are going slow enough to be able to speak while running. Pick a distance that you would like to achieve. Don't be afraid to walk!

### **Strength**

Squats

5 sets of 10 (each leg)

Pushups

5 sets of 10

### **Speed**

4 wind sprints

### **Mobility**

Hurdles

Use short hurdles to improve the mobility and foot placement skills of the Athlete. This can be done walking or running, whatever the Athlete is most comfortable with.

### **Cool Down/Coordination**

Basketball - Shoot around

This will bring the heart rate down after the previous exercise and improve the hand eye coordination of the athlete. Find a local court (indoor or outdoor) near your to shoot the basketball around.

### **Stretch**

Hold each stretch for 10 seconds. Make sure to not stretch too far or you may hurt yourself.

- Arm Circles (Forwards and backwards)
- Side lunge
- Front Lunge
- Seated hamstring stretch
- Butterfly
- Standing quad stretch
- Ankle circles
- Neck half circles (do not roll your neck backwards, look down and rotate slowly. Your eyes should stay on the floor)

## **Day 5 Exercises**

### **Warm up**

Jumping Jacks. Do 3 sets of 10 jumping jacks to get ready for the workout.

### **Strength**

Squat Jumps - this is the same as regular squats but you are jumping at the top.

3 sets of 10

Push-ups

3 sets of 10

### **Speed**

10 wind sprints

### **Mobility**

High Knees

Athletes can do this in place or while moving forward. Athletes will hold their hands out in front of them and attempt to touch their knee to their same hand. They will do this for both sides as fast as they can. 3 sets of 30 seconds or as much as the Athlete can do.

### **Cool Down/Coordination**

Bounce passes with Basketball

This will bring the heart rate down after the previous exercise and improve the hand eye coordination of the athlete. Ensure the Athlete is trying to only let the ball bounce once between partners.

### **Stretch**

- Arm Circles (Forwards and backwards)
- Side lunge
- Front Lunge
- Seated hamstring stretch
- Butterfly
- Standing quad stretch
- Ankle circles
- Wrist Circles
- Neck half circles (do not roll your neck backwards, look down and rotate slowly. Your eyes should stay on the floor)



## **Resources in the community**

One thing that is essential for the maintenance of positive mental health is interacting with the community. This section of the book will explain how you can help your Athlete with Down Syndrome become more engaged in their community and in turn improving their mental health.

### **Down Syndrome Associations**

The vast majority of communities will have a Down Syndrome Association. Being involved in a Down Syndrome Association is a wonderful way for individuals and families to meet for various activities. Many Down Syndrome Associations will offer many social opportunities for their individuals and families with Down Syndrome. This is a great way of meeting others and building strong ties to the community. Having social events to look forward to is essential in promoting strong mental health.

For many families, having a baby with Down Syndrome is a scary experience that may leave you feeling alone and helpless. Building ties within your community is essential in combating this feeling. Meeting other families that have gone through similar experiences will help normalize said experience. Furthermore, you may have questions about how to raise your child that you do not feel can be answered by your friends or even your physician. Having mentorship and friendship with individuals in the Down Syndrome community can help you gain the advice you may be seeking.

### **Special Olympics**

In order to stay healthy we must exercise. For individuals with Down Syndrome (and other special needs for that matter) this becomes more challenging. However, Special Olympics sports programs are a great way for individuals with Down Syndrome to get active, have fun playing sports and meet new people. The Special Olympics offers sports for younger athletes and adults as well. There are numerous sports that are offered in various areas to support all individuals with Special Needs. For many Special Olympics Athletes, their sports are their social lives. Being able to make friends and stay social is essential in the maintenance of positive mental health.

Below, you will find a chart of sports offered by the Special Olympics in Canada. Check your local Special Olympics Chapter to see which sports are offered in your area!

### **Sports for Younger Athletes**

Active Start - This program is a physical activity program for athletes and their families (ages 2-6)

FUNDamentals - This is the next level of Active Start for athletes (ages 7-12)

The following sports are for athletes who are typically at least 13 years of age. Some programs require athletes to be older than 13. This is dependent upon the community and the sport club. These sports are divided up by their competition schedule. Some sports such as basketball are considered Summer Sports but their seasons are in the winter. Check your local Special Olympics Community for details as to when these sports run in your area.

### **Winter Sports**

Alpine Skiing  
Cross Country Skiing  
Curling  
Figure Skating  
Floor Hockey  
Nordic Skiing  
Snowshoeing  
Speed Skating

### **Summer Sports**

Athletics  
5 Pin Bowling  
10 Pin Bowling  
Basketball  
Bocce  
Powerlifting  
Soccer  
Softball  
Swimming  
Golf  
Rhythmic Gymnastics

### **Other**

Many communities will offer other activities for their athletes such as walking clubs, yoga and fitness groups as well.

### **Other**

For many individuals, staying in shape is a challenge. Especially when many jobs are becoming less and less physical due to advancements in technology that have forced humans to work at desks. This has forced a sedentary lifestyle on many individuals. It is essential to maintain as physical a lifestyle as possible in order to maintain good health. For individuals with special needs, it is essential that a routine is maintained. Building a routine is essential to the

maintenance of their mental health and this could also be translated to physical health as well. For instance, here are some way that you can help individuals with Down Syndrome improve their overall health through the use of a routine:

Having a bedtime and wake up time

- This forces the circadian rhythm to work properly and ensures that the individual is getting an adequate amount of rest each day.

Daily walks

- Walking is healthy for the heart and the brain. Obviously, this is an aerobic exercise that can improve cardiovascular function, however walking can also improve brain function. Research also shows that walking can improve the amount of blood sent to the brain (Experimental Biology, 2017).

Meals at the same time each day

- This has been shown to decrease weight and cholesterol as well (Pot et al., 2016). Eating at the same time can decrease the risk of obesity (Almoosawi et al., 2016).

### **About the Author**

Justin Heenan is a Special Education and Health & Physical Education Teacher who is passionate about helping individuals and families with Down Syndrome. He has extensive experience helping children, adolescents and adults with various Special Needs reach their athletic goals in the Special Olympics and in the Durham District School Board. He hopes this guide will help a wider range of people improve their health, fitness and overall well being.

Here are some of his achievements and qualifications.

- Ontario Certified Teacher in the Durham District School Board
- Registered Psychotherapist (Qualifying) in Private Practice
- Course Instructor at Trent University's School of Education
- Board Member at the Durham Down Syndrome Association
- Council Member of the Greater Durham Special Olympics
- Special Olympics Ontario's 2021 Educator of the Year
- Manager of Active Start and FUNdamentals in the Greater Durham Special Olympics
- Master of Arts in Counselling Psychology at Yorkville University
- Bachelor of Education from Trent University
- Bachelor of Arts (Honours) in French and Spanish from Queen's University



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