THE UNIVERSITY OF BRITISH COLUMBIA

Active Kids Training Module for Including Children with Disabilities

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Learning Objectives/Lesson Outline

1. Describe exercise considerations for individuals with disabilities

2. Identify examples of models of modification, curricular modifications, instructional modifications, and game/sport modifications

3. Develop a sample inclusive lesson plan

Intellectual Disability Example: Autism

What is Autism?

- **Intellectual disability characterized mainly by atypical behaviours, social interactions, and communication**
  - Ex. stimming/repetitive behaviours

Autism Spectrum Disorders

- Falls on a continuum:

Autistic Disorder (low functioning) ← Average → Asperger's Disorder (high functioning)

Characteristics

- Keep in mind each individual is unique; some individuals MAY display the following characteristics:

Characteristic	***Examples***
• Impairments in cognitive/sensory integration	Ex. hypo- or hyperactive to responses in five senses
• Impairments or delays in fine and gross motor skills	Ex. difficulty in coordinating hands
• Counteraction to change in setting or routines	Ex. prefer familiarity and consistency

Activity Break 1: Champions

Raise your hand if you have worked with an individual with autism.

- You are a champion on the topic!

Form small groups (each must have at least 1 champion).

In your groups discuss strategies for working with children with ASD during an Active Kids session.

- Champions please share strategies/techniques that have worked for you in the past.

Intellectual Disability Example: Autism

Important exercise considerations/contraindications

1. Allocate extra time

Keep in mind individuals may have difficulties in memory, learning, and processing information

2. Simplify activities and instructions

Complete one activity at a time

Ex. do activity 1 and then move on to activity 2

Choose easier activities to learn

3. Demonstrate steps for new activities

Physically and Verbally walk through activities with them

4. Incorporate group activities

Family involvement

Allow individuals to interact with peers

5. Be patient

Some individuals may:

- require more attention than others
- have inconsistent effort levels
- Show frustration

6. Consider a reward system

Can motivate individuals to complete a task and get them going

7. Understand triggers and ways to manage

Be prepared for frustration, sadness, anger

Look out for warning signs

8. Have Fun!

Person-first! Not their disability

Engage with individuals and cheer them on!

Complete activities with them!

Intellectual Disability: Resources

Resources to learn more about <u>Autism</u>

- https://www.spectrumnews.org/features/multimedia/autisms-definition-changed-time/
- https://www.cdc.gov/ncbddd/autism/facts.html
- https://www.psychiatry.org/patients-families/autism/what-is-autism-spectrum-disorder
- https://www.autismspeaks.ca/about-autism/

Resources to learn more about <u>other</u> intellectual disabilities

- ***Down Syndrome***
  - https://www.cdc.gov/ncbddd/birthdefects/downsyndrome.html
  - https://cdss.ca/resources/general-information/
- ***Tourette's Syndrome***
  - https://www.cdc.gov/ncbddd/tourette/facts.html#:~:text=Tourette%20Syndrome%20(TS)%20is%20a,keep%20blinking%20over%20and%20over.
  - https://tourette.ca/
- ***Attention Deficit Hyperactivity Disorder***
  - https://www.cdc.gov/ncbddd/adhd/facts.html
  - https://www.psychiatry.org/patients-families/adhd/what-is-adhd

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Physical Disability Example: Cerebral Palsy

What is Cerebral Palsy?

- **Damage to the brain that impacts motor control and coordination**
- Often occurs in utero, during birthing, or immediately after birth

Causes:

- In premature infants:
  - Damage to white matter of brain
  - Abnormal brain development
- In full term newborns:
  - Bleeding in the brain
  - Severe lack of oxygen in brain

Physical Disability Example: Cerebral Palsy

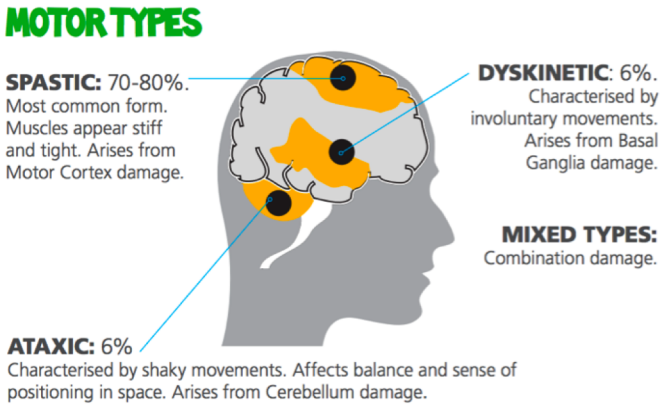
Signs and Symptoms

- **Ataxia** (poor coordination in voluntary movements)
- **Varying muscle tone**
  - Hypertonia → too rigid
  - Hypotonia → too flaccid
- **Involuntary movements**
- **Weakness in one or more limbs**
- **Bradykinesia** (slow movements)
- **Difficulty walking**
- **Favoring one side of the body**
- **Incontinence**
- **Speech, vision, hearing impairments**
  - Speech difficulties not to be confused with cognitive impairment
- **Posture difficulties**
- **MAY have intellectual disabilities**
  - Not everyone
  - May affect motor function → affects speech

Physical Disability Example: Cerebral Palsy

4 Types of Cerebral Palsy

Spastic	• High degree of muscle tone • Muscles are stiff and tight
Ataxic	• Uncontrolled flailing movements • Shaky movements • Often decreased balance and spatial awareness of limbs
Dyskinetic/ Athetoid	• Impairment in balance and coordination • Involuntary movements
Mixed Types	• Combination of any type mentioned above



Source Image: https://cerebralpalsyscotland.org.uk/get-information/types-of-cerebral-palsy/

Physical Disability Example: Cerebral Palsy

Exercise considerations → Exercise Solutions

Tightness is common in shoulder adductors, plantar flexors, and possibly other muscles

Stretching is necessary BUT be cautious not to overstretch contractures

1. Strive to achieve muscle balance

2. Strengthen spastic and weak muscles

3. Work on antagonistic muscle groups during the same period

Activity Break 2: Warm Up

- Bryce has CP that causes tightness in his biceps and hips

- Create a fun warm up routine/game that will:

1) Warm his muscles by ramping up from light to moderate intensity
2) Target his biceps and triceps
3) Target his hip flexors and glutes

Physical Disability: Resources

Resources to learn more about <u>Cerebral Palsy</u>

- https://www.cdc.gov/ncbddd/cp/facts.html
- https://www.canchild.ca/en/diagnoses/cerebral-palsy
- https://cerebralpalsy.org.au/our-research/about-cerebral-palsy/what-is-cerebral-palsy/

Resources to learn more about <u>other</u> physical disabilities

- ***Spinal Cord Injury***
  - https://www.aans.org/en/Patients/Neurosurgical-Conditions-and-Treatments/Spinal-Cord-Injury
  - https://www.who.int/news-room/fact-sheets/detail/spinal-cord-injury
- ***Multiple Sclerosis***
  - https://www.nationalmssociety.org/What-is-MS/Definition-of-MS
- ***Amputation***
  - https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/amputation#:~:text=Amputation%20is%20the%20loss%20or,emotional%20trauma%20can%20complicate%20recovery.
- ***Spina Bifida***
  - https://www.cdc.gov/ncbddd/spinabifida/facts.html#:~:text=Spina%20bifida%20is%20a%20condition,not%20close%20all%20the%20way.
- ***Muscular Dystrophy***
  - https://www.cdc.gov/ncbddd/musculardystrophy/facts.html
- ***Osteoarthritis***
  - https://www.cdc.gov/arthritis/basics/osteoarthritis.htm

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Sensory Disabilities: Common Ones & Resources

Sensory Disability	Hearing Loss	Visual Impairments
Types	Conductive Hearing Loss Sensorineural Hearing Loss Mixed Hearing Loss Auditory Neuropathy Spectrum Disorder	Myopia Hyperopia Cataracts Macular degeneration Glaucoma Diabetic Retinopathy Colour blindness
Resources	https://www.cdc.gov/ncbddd/hearingloss/types.html	https://www.news-medical.net/health/Types-of-visual-impairment.aspx

Sensory Disabilities: General Exercise Considerations

Spot the Imposter

Together, complete the exercise that corresponds with the imposter

Exercise	Hearing Loss
Squat/Press	Use **visuals** (pictures, handouts)
Ride Side Lunge/Lateral raise	**Teach Back** (give instructions, have them tell us what they interpreted)
Left side lunge/Lateral raise	**Be mindful** balance may be challenging
Jumping jacks/arm jacks	**Assume** intellectual disability is also present
Butt kicks/bicep curl	Use **signals** (motions/colours)
Front kick/punch	Use **sound amplifiers**
Back kick/uppercut	**Buddy system**
Side kick/jab	**Discuss strategies** with them

Sensory Disabilities: General Exercise Considerations

Spot the Imposter

Exercise	Visual Impairments
Side kick/jab	**Instructional prompts** (verbal, environmental, hand-over-hand)
Squat/Press	**Assume** they are fully blind
Side kick/jab	Allocate **extra time** to explore the environment
Left side lunge/Lateral raise	Allow them to **move independently**
Jumping jacks/arm jacks	**Ask if need help** (never assume)
Butt kicks/bicep curl	**Talk normally** (no need to raise voice)
Front kick/punch	**Lightly touch arm** (when introducing yourself)
Back kick/uppercut **Ride Side Lunge/Lateral raise**	**Clothing choice** (wear solid colours, different colours for upper and lower body, tighter-fit clothing)

Sensory Disabilities: General Exercise Considerations

Spot the Imposter

Sensory Disability	Hearing Loss	Visual Impairments
Exercise Considerations	Use **visuals** (pictures, handouts)	**Instructional prompts** (verbal, environmental, hand-over-hand)
		...nment
		...urself)
	Buddy system	...erent colours for upper and lower body, tighter-fit clothing)
	Discuss strategies with them	

Never Assume
(it makes an A$$ out of u and me)

Ask questions and be interested to get to know your participant

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Instructional Modifications: Class Organization

1.	**One to one instruction**	Individualized
2.	**Small groups**	3 to 10 students
3.	**Large group**	Entire class together
4.	**Mixed group**	Various formats within one session
5.	**Peer teaching or tutoring**	Using classmates or students without disabilities from other classes for teaching and assisting students with disabilities • One-to-one (classmate is tutor, student with disability is the tutee) • Classwide (all classmates pair up tutor-tutee) • Small group (4-6 students/group) • Cross-age (tutee is younger than tutor) • **Ex. in classwide peer tutoring, a child with mild Autism can act as tutor and tutee (builds leadership and communication skills)**

Instructional Modifications: Class Organization

6.	**Teaching stations**	Several areas in which smaller subsets of the class rotate through to practice skills • Stations can be unique in terms of skill level (students can progress to different stations) • In order to accommodate UDL, each station should include a variety of adaptations/challenges (differing abilities for each child) • **Ex. Child with Cerebral Palsy moves through a circuit and arrives at a beam balancing station, they are able to pick which type of walk they can do (bunny hop, snake, or chicken walk)**
7.	**Self-paced independent work**	Each student works on individual goals at his or her own pace following directions on task cards or with guidance from the teacher or assistant
8.	**Cooperative learning**	Students work together to accomplish shared goals • Objectives must be completed by all individual students working together • **Ex. Students need to complete 5 different kinds of rolls 50 times. Child with Autism can complete roll types that fit their goals (ex. log roll instead of somersault) and may contribute a smaller number of rolls than their peers.** All students still work together to achieve 50 rolls total.

Activity Break 3: Class Organization

CASE 1

George is 10-years-old and is living with spastic Cerebral Palsy, he faces difficulties with balance and coordination. He also has a speech impairment which makes communication with others challenging. George has been described by others as a bundle of joy and he loves interacting and socializing with others.

CASE 2

6-year-old Becky is on the low end of the Autism spectrum. She loves participating in gymnastics but she has a history of being overstimulated when in large groups. This can lead to frustration or a meltdown when she can't communicate her needs. Her physiotherapist recommends she still participate to strengthen her fine and gross motor skills.

1. Select one type of instructional modification you feel is most appropriate for each case study.
2. Pair up with a partner and discuss what you both chose. Think of potential pros and cons of your selected instructional strategies.

Morris and Stiehl's Games Design Model

A guidance to modify any game/sport's basic structure

Purposes	Players	Movements	Objects	Organization	Limits
Development of motor skills	Individuals	Types	Types/uses	Patterns	Performance
Enhancement of self-worth	Groups	Location	Quantity	Location of players/Boundaries	Environment
Improvement of fitness	Numbers	Quality	Location		
Enjoyment		Quantity			
Satisfaction		Sequences			
Development of cognitive skills		Relationships			

Games Design Model: components to be manipulated
Adapted from: Morris and Stiehl, 1999, *Changing kids' games*, 2nd ed. (Champaign, IL: Human Kinetics), 18 [or 139].

Morris and Stiehl's Games Design Model: Application Example

Use of the trampoline to improve dynamic weight bearing

Students are positioned in a circle on the trampoline surrounding the student with Cerebral Palsy and are instructed to perform a tuck jump one at a time.

The student with Cerebral Palsy tries to maintain balance in the middle of the trampoline with the support of the instructor.

Students who are performing the tuck jumps are instructed to land in a motorcycle position.

Students are instructed to jump as soon as the person next to them is finished jumping.

The goal is for the students jumping to be able to keep the 'wave' going without interruptions.

Morris and Stiehl's Games Design Model (Cerebral Palsy) continued

Purpose

➢ **Development of motor skill**

- The objective for the student(s) with cerebral palsy is to develop stability and balance. The objective for the other students is to develop the tuck jump movement.

➢ **Improvement of Fitness**

- The student with cerebral palsy is working on their muscular endurance through constant muscle activation to maintain balance

Movements

➢ **Type**

- The student with cerebral palsy is maintaining 'surf board' balance while the other students are practicing their jumping and landing skills'

➢ **Locations**

- The student with cerebral palsy is situated in the middle of the trampoline and the other students are positioned in a circle around the centre

➢ **Sequence**

- Students who are jumping are instructed to jump one at a time

Organization of Players

➢ **Boundaries/position**

- Student with cerebral palsy is allowed to move freely in order to maintain balance. The other students must maintain their starting positions on the trampoline

General Adaptations of the 5 S's

Surface	Alter the texture of the surface of the equipment
Speed	Slowing down the speed of some equipment can help many children with coordination problems
Size	Equipment can be adapted in size to allow the user to be more successful
Sound	The addition of sound to sports equipment is important for children with visual impairments
Support	Adding extra support when teaching ball skills makes activities less dynamic and increases the child's chance of success

Modifications for Students with Specific Functional Impairments (Cerebral Palsy)

Examples: General Adaptation Considerations: the 5 S's

1) SURFACE	Use bar grip gloves when hanging off of a bar
2) SPEED	Use wedges that have a lower slope for slower tumbling
3) SIZE	Use wider balance beams
4) SOUND	Ensure landing platforms are cushioned to decrease harsh loud noises that can cause overstimulation
5) SUPPORT	Use in-ground trampolines when possible to minimize the effort needed to reach the equipment

Models of Modification: Universal Design For Learning (UDL)

What is UDL?

- A teaching method that benefits **EVERYONE** by:
  1. Reducing barriers to learning
  2. Appreciating and considering diverse learning styles and needs

3 Main Principles → used to create lesson plans and evaluations:

Engagement the "WHY" of learning	**Representation** the "WHAT" of learning	**Action and Expression** the "HOW" of learning
Allow teachers and practitioners to motivate students in a variety of means **Considering different needs in how students engage in tasks**	Delivering information in multiple formats **Considering different needs in how students learn**	Evaluating and allowing students to showcase their knowledge and skills in different ways **Considering different needs in how students display their learning**

Models of Modification: Universal Design For Learning (UDL)

- ***Examples of Engagement***

Giving students autonomy in:

Exercise variations
Types of equipment
Rules to adhere to
How to move

Ex. When learning skills/movements on the bars, students can choose:

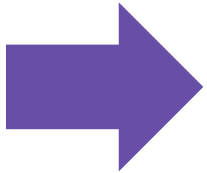
- ➔ Different exercises (swinging, hanging, flipping)
- ➔ Different bar heights and thickness
- ➔ How long they have to stay on the bar
- ➔ Moving in a plane of their choice (up and down, left and right)

Models of Modification: Universal Design For Learning (UDL)

- ***Examples of Representation***

Delivering information through:

Demonstrations
Hands-on learning
Written descriptions
Audio
visuals/pictures/photos



Ex. When teaching exercises on a balance beam, providing instructions by:

- ➔ Having instructor demonstrate walking on beam
- ➔ Allowing each student attempt it
- ➔ Writing instructions on a whiteboard or poster paper
- ➔ Talking out loud while doing any of the above
- ➔ Providing pictures or showing a video on how to complete the task

Models of Modification: Universal Design For Learning (UDL)

- ***Examples of Action and Expression***

Evaluating student progress and learning through allowing students to engage with material:

Physically

Verbally

Visually/ through drawings

Evaluation and goals may be adjusted:

Based on a student's abilities

Based on a student's accommodations

Based on what a student finds challenging/their goals

Ex. When assessing knowledge of a cartwheel, students can display their learning through:

- ➔ Doing a cartwheel with legs straight
- ➔ Doing a cartwheel with knees bent
- ➔ Showing how to do a cartwheel with their fingers
- ➔ Drawing a person doing a cartwheel
- ➔ Explaining what a cartwheel looks like

Universal Design of Learning (UDL) Summary

Fix the lesson instead of fixing the student

- An education approach that removes barriers to learning to benefit all students
- Addresses the different learning needs of students
- Accessible and affordable to all
- Offers multiple options of engagement, representation, and action and expression

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Sample Inclusive Lesson Plan

A student for Gym Kids 2, Chong, has Cerebral Palsy and Autism. The activities for the lesson are:

Group 1
Group 2
Group 3

Floor	Beam	Bars	Vault	Trampoline
Front roll Handstand Cartwheel	Locomotions Front rolls (assisted)	Sole hangs Skin the cat Front support roll down Long swings	Donkey kicks Timber falls	Shape jumps Seat drop (& swivel hips)

Autism and Cerebral Palsy common Characteristics:

- Impairments in cognitive/sensory integration
- Impairments or delays in fine and gross motor skills

Through a Universal Design of Learning model, how would you adapt this curriculum to suit everyone? Consider that Steve has mixed type Cerebral Palsy and Autism.

Sample Inclusive Lesson Plan: Floor (15-20 min: UDL adapted)

- **Set up a simple circuit to get a feel for what the kids skill level is.**
- **Start or finish floor by gathering all the kids into the middle and practicing some handstand progressions:** donkey kicks, teeter-totters, small handstands, etc.

Original Sample Plan	UDL: Engagement	UDL: Representation	UDL: Action and Expression
Front roll down the incline – if this is too easy, kids can try front straddle roll or back roll			

Sample Inclusive Lesson Plan: Floor (15-20 min: UDL adapted)

- **Set up a simple circuit to get a feel for what the kids skill level is.**
- **Start or finish floor by gathering all the kids into the middle and practicing some handstand progressions:** donkey kicks, teeter-totters, small handstands, etc.

Original Sample Plan	UDL: Engagement	UDL: Representation	UDL: Action and Expression
Sticky bug against the wall - if this is too easy, the children can kick up to handstand			

Sample Inclusive Lesson Plan: Floor (15-20 min: UDL adapted)

- **Set up a simple circuit to get a feel for what the kids skill level is.**
- **Start or finish floor by gathering all the kids into the middle and practicing some handstand progressions:** donkey kicks, teeter-totters, small handstands, etc.

Original Sample Plan	UDL: Engagement	UDL: Representation	UDL: Action and Expression
Cartwheel over a block – if this is too easy, the kids can do their cartwheel on the floor			

Appraising Your Lesson Plan

Quality Assessment

1. Is the adaptation safe?
2. Does the modification maintain the concept of the game?
3. Was the child included in the adaptation, and does he/she embrace the concept?
4. Is the game still age-appropriate?
5. Is the child still included successfully?
6. Is the adaptation holding the child back and not affording a challenge?
7. Does the adaptation still allow the child with a disability to work on either class goals or IEP goals?
8. Does the adaptation alienate the child from the rest of the class?
9. Does the change allow the student with a disability to participate successfully yet still be challenged?
10. Does the modification make the setting unsafe for the student with a disability or for peers?
11. Does the change affect peers without disabilities?
12. Does the change cause an undue burden on the general physical education teacher?

Other Helpful Resources to Learn More

UBC KIN 341

Strategies for Teaching Children With Autism in Physical Education
6324.pdf (humankinetics.com)

Canucks Autism Network - Gymnastics.
https://www.canucksautism.ca/programs/gymnastics/#:~:text=The%20Gymnastics%20program%20provides%20an,support%20workers%20and%20dedicated%20volunteers.

Cerebral Palsy and Physical Activity
https://cprn.org/cerebral-palsy-and-physical-activity/

UDL

https://udlguidelines.cast.org/engagement/effort-persistence/collaboration-community
https://www.teaching.unsw.edu.au/universal-design-learning-udl

In The Gym!

Adapt a game of basketball to include a child with autism

Key Take-Homes to Consider…

Disability-specific considerations and context

Autism

Considerations	Context
1. Allocate extra time, 2. Simplify activities and instructions, 3. Demonstrate steps for new activities, 4. Incorporate group activities, 5. Be patient, 6. Consider a reward system, 7. Stay Calm, 8. Have Fun!	Intellectual disability characterised mainly by atypical behaviours, social interactions, and communication

Cerebral Palsy

Considerations	Context
1. Make obtaining muscle balance a goal 2. Strengthen spastic and weak muscles 3. Work on antagonistic muscle groups during the same period	Damage to the brain that impacts motor controls and coordination

Models of modification

Universal Design For Learning (UDL)

Engagement
Considering different needs in how students engage in tasks

Representation
Considering different needs in how students learn

Action and Expression
Considering different needs in how students display their learning

Key Take-Homes to Consider…

Instructional modifications

Class Organization

1. One to one instruction
2. Small groups
3. Large group
4. Mixed group
5. Peer teaching or tutoring
6. Teaching stations
7. Self paced independent work
8. Cooperative learning

Information Presentation Strategies

1. Verbal Cues
2. Verbal cues/supports
3. Demonstrations
4. Starting & stopping signals
5. Productive vs Reproductive Teaching

Game/sport modifications

Morris and Stiehl's Games Design Model

(Used to modify any game/sport's basic structure)

Purposes
Players
Movements
Objects
Organization
Limits

General Adaptation Considerations: 5 S's

1. **Surface**
2. **Size**
3. **Speed**
4. **Sound**
5. **Support**

References

Aykol, B. & Pektaş, S. (2018). The Effects of Gymnastics Training Combined with Music in Children With Autism Spectrum Disorder and Down Syndrome. *International Education Studies, 11*(11), 46-52. DOI: https://doi.org/10.5539/ies.v11n11p46

Cook, O., Frost, G., Twoze, D., Wallman, L., Falk, B., Galea, V., Adkin, A., & Klentrou P. (2015) CAN-flip: A Pilot Gymnastics Program for Children with Cerebral Palsy. *Adapted Physical Activity Quarterly, 32*, 349-370. DOI: http://dx.doi.org/10.1123/APAQ.2015-0026

Canadian Disability Participation Project. (2018). *A Blueprint for Building Quality Participation in Sport for Children, Youth, and Adults with a Disability.* University of British Columbia, Kelowna, BC. https://cdpp.ca/sites/default/files/CDPP%20Quality%20of%20Participation%20Blueprint%20Jan%202020.pdf

Giangreco, M. F. (2007). Extending Inclusive Opportunities. *Educational Leadership, 64*(5), 34-37 https://www.uvm.edu/sites/default/files/Center-on-Disability-and-Community-Inclusion/GiangrecoEL0764534-37.pdf

Rosenbaum, P., & Gorter, J. W. (2012). The 'F-words' in childhood disability: I swear this is how we should think!. *Child: care, health and development*, 38(4), 457–463. DOI: https://doi.org/10.1111/j.1365-2214.2011.01338.x

The Main Types of Cerebral Palsy [Diagram]. Cerebral Palsy Scotland. https://cerebralpalsyscotland.org.uk/get-information/types-of-cerebral-palsy/