

Annexure A.

Letter from Health Professional Council of South Africa



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**PROFESSIONAL BOARD FOR OCCUPATIONAL THERAPY, MEDICAL ORTHOTICS AND PROSTHETICS AND
ARTS THERAPY**

Mrs N du Plessis
Occupational Therapist
94 Graskop road
Waterkloof Heights
0181

Department: PROFESSIONAL BOARDS

Reference: Ms N.Mguli

Date: 21 May 2015

E-mail: ninette@lightprojects.co.za

Dear Mrs Du Plessis,

**APPLICATION FOR SKILLS IN HIPPO THERAPY TO BE INCLUDED IN THE SCOPE OF
OCCUPATIONAL THERAPY PRACTICE**

This serves to confirm that the Education Committee recently considered the request submitted.

The Committee resolved that you be advised that specific provision could not be made in the scope of Occupational Therapy for Hippotherapy as it was regarded as a modality already provided for, in the scope Occupational Therapy.

Please do not hesitate to contact me should you require further assistance or information.

Yours sincerely



MS N MGULI
ACTING COMMITTEE COORDINATOR

Cc: Lisa Mc Cullen
The chairperson of EATASA
94 Graskop road
Waterkloof Heights
0181

Annexure B.

The certificate of ethical clearance

The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.

- PWA 0002507, Approved dt: 22 May 2012 and Expires 26 Oct 2016.
- IRD 0000 2206 ICRG000176? Approved dt: 13/04/2011 and Expires 15/04/2014.



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences Research Ethics Committee

03/10/2013

**Approval Certificate
Amendment
(to be read in conjunction with the main approval certificate)**

Ethics Reference No.: 359/2013

Title: The effect of hippotherapy on the Physiological Cost Index and on school activities of adolescents with diplegia.

Dear Ms Ninette Du Plessis

The Amendment as described in the documents received on 29/08/2013 was approved by the Faculty of Health Sciences Research Ethics Committee on the 02/10/2013

Please note the following about your ethics amendment:

- Please remember to use your protocol number (359/2013) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, or monitor the conduct of your research.

Ethics amendment is subject to the following:

- The ethics approval is conditional on the receipt of 8 monthly written Progress Reports, and
- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the Investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

Dr R Sommers; MBChB; MMed (Int); MPharmD.
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 81 of 2003 in particular in regard to research and the United States Code of Federal Regulations Title 45 and 46. This compliance attests to the highest norms and principles for research established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Clinical Research: Principles Structures and Processes 2009 (Department of Health).

• Tel: 012-3541330 • Fax: 012-3512357 • Email: 0866515924 • E-Mail: mande@med.up.ac.za
• Web: www.researchethics.up.ac.za • U.W. Snyman Bldg (South Level 2-3) • Private: Unit x.123, Arcadia, P.O. Box 2007

Annexure C.

Consent of parents/ guardian for their child to be recorded on video



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department of Occupational Therapy

Consent from the parents/guardian for a video recording to be made of the interview and a video recording for pre-treatment and on-going evaluation for selection of the horses

The Effect of Hippotherapy on the Physiological Cost Index and on School Activities of Adolescents with Diplegia.

Five interviews will be conducted throughout the study to obtain information from you child about school functioning. Because there is not enough time to document the answers during the interview a video recording of each interview will be made, in order to allow the researcher to do the documentation afterwards.

After each a video of your child will be taken during writing in sitting, standing and walking to allow for a postural. This is needed to select a horse that is suitable.

If you sign at the bottom it will mean that you agree for your child to be videoed as explained.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it, and any questions that I have asked have been answered to my satisfaction.

Print Name of Parent/Guardian _____

Signature of Parent/Guardian _____

Date _____
Day/month/year

Person Obtaining Consent _____

If illiterate:

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness _____ **and**

Signature of witness _____

Date _____
Day/month/year

Thumb print of participant



Statement by the researcher/person taking consent:

I have accurately read out the information sheet to the potential participant, and, to the best of my ability, made sure that the participant understands that the following will be done:

1. Five interview sessions throughout the course of the study will be recorded on video. This will be done at the school.
2. After the interview the participant will be recorded on video in sitting, standing and walking. Thus also five video recordings for evaluation purposes will be made at the school.

I confirm that the parents/guardian was given an opportunity to ask questions about the video recording, and all the questions asked by the parent/guardian have been answered correctly and to the best of my ability. I confirm that the individual has not been forced into giving consent, and the consent has been given freely and voluntarily.

A copy of this information and consent form has been provided to the parent/guardian.

Print Name of Researcher/person taking the consent _____

Signature of Researcher/person taking the consent _____

Date _____

Annexure D.

Consent of participant to be recorded on video



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department of Occupational Therapy

Consent from the participant for a video recording to be made of the interview and a video recording for pre-treatment and on-going evaluation for selection of the horses

The Effect of Hippotherapy on the Physiological Cost Index and on School Activities of Adolescents with Diplegia.

Five interviews will be conducted throughout the study to obtain information from you about your functioning at school. Because there is not enough time to document your answers during the interview a video recording of each interview will be made, in order to allow the researcher to document your answers afterwards.

Just after each interview you will also be videoed during writing in sitting, standing and walking to allow for evaluation of your posture. This is needed to select a horse that is suitable for your body.

If you sign at the bottom it will mean that you agree to be videoed as explained.

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it, and any questions that I have asked have been answered to my satisfaction.

Print Name of Participant _____

Signature of Participant _____

Date _____
Day/month/year

Person Obtaining Consent _____

Parent/Guardian as Witness _____


If illiterate:

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness _____ **AND** **Thumb print of participant**

Signature of witness _____

Date _____
Day/month/year



Statement by the researcher/person taking consent:

I have accurately read out the information sheet to the potential participant, and, to the best of my ability, made sure that the participant understands that the following will be done:

1. Five interview sessions throughout the course of the study will be recorded on video. This will be done at the school.
2. After the interview the participant will be recorded on video in sitting, standing and walking. Thus also five video recordings for evaluation purposes will be made at the school.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been forced into giving consent, and the consent has been given freely and voluntarily.

A copy of this information and consent form has been provided to the participant.

Print Name of Researcher/person taking the consent _____

Signature of Researcher/person taking the consent _____

Date _____

Annexure E.

Interview schedule for semi-structured interview during the baseline phase



UNIVERSITEIT VAN PRETORIA
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YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department of Occupational Therapy

*Interview schedule for the semi-structured interview
durina the baseline phase*

The Effect of Hippotherapy on the Physiological Cost Index and on School Activities of Adolescents with Diplegia.

The researcher will explain to the adolescent that no answer can be wrong and that honesty during the answering of the questions will help tremendously.

- 1. Feeling question: (a general question to open the conversation)**
How do you feel about school?
Probe:
How do you think you feel about school? Can you explain it to me?
- 2. Experience question:**
Tell me your experience about school during the past week?
- 3. Experience question:**
How easy or difficult was it to move around the class during the past week?
Probe:
Very easy, easy, hard or very hard? Why do you say this?
- 4. Experience question**
How easy or hard was it to move around on the playground during the past week?
Probe:
Very easy, easy, hard or very hard? Why do you say this?

5. Experience question

How easy or difficult was it to sit upright and complete your classwork during the past week?

Probe:

When you get to school?

And just before you go home?

6. Experience question

Did you finish your homework in time during the past week?

Probe:

Tell me more about it please.

7. Experience question

For how long are you able to sit still and listen to your teacher in class?

Probe:

Did this change over the past few weeks?

8. Experience question

Are you able to finish your written work during the time given to you by the teacher, when required?

Probe:

Do you think you work faster or slower than your friends?

9. Experience question

How often did you feel tired during the past week?

10. Experience question

What interferences made school more difficult during the past week?

Annexure F.

Interview schedule for semi-structured interview during the intervention phase



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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department of Occupational Therapy

*Interview schedule for the semi-structured interview during
the intervention phase and thereafter*

The Effect of Hippotherapy on the Physiological Cost Index and on School Activities of Adolescents with Diplegia.

The researcher will explain to the adolescent that no answer can be wrong and that honesty during the answering of the questions will help tremendously.

- 1. Feeling question:** (a general question to open the conversation)
How do you feel about school?
Probe:
How do you think you feel about school? Can you explain it to me?
- 2. Experience question:**
Tell me your experience about school during the past week?
- 3. Experience question:**
How easy or difficult was it to move around the class during the past week?
Probe:
Very easy, easy, hard or very hard? Why do you say this?
- 4. Experience question**
How easy or hard was it to move around on the playground during the past week?
Probe:
Very easy, easy, hard or very hard? Why do you say this?
- 5. Experience question**
How easy or difficult was it to sit upright and complete your classwork during the past week?
Probe:

When you get to school?
And just before you go home?

6. Experience question

Did you finish your homework in time during the past week?

Probe:

Tell me more about it please.

7. Experience question

For how long are you able to sit still and listen to your teacher in class?

Probe:

Did this change over the past view weeks?

8. Experience question

Are you able to finish your written work during the time given to you by the teacher, when required?

Probe:

Do you think you work faster or slower than your friends?

9. Experience question

How often did you feel tired during the past week?

Probe:

Did this change since you started horse riding?

10. Experience question

What interferences made school more difficult during the past week?

Probe:

Did it change since you started horse riding? How?

11. Experience question

Did any of the things we spoke about changed since you started horse riding?

Probe:

(The researcher will refer back to some of the answers in previous questions)

You said that.....do you think this was due to the horse riding?

Annexure G.

Information and consent form for the pilot study



Faculty of Health Sciences
School of Health Care Sciences
Department Occupational Therapy

***Informed Consent Form for the parents/guardians during
the pilot study***

**The Effect of Hippotherapy on the Physiological Cost Index
and on School Activities of Adolescents with Diplegia.**

Informed Consent form for parents of adolescent diplegic learners

I would like to invite your child to volunteer to be part of my pilot study of my research on hippotherapy. Hippotherapy is therapy done on horseback by an occupational therapist. In my research I would like to see how hippotherapy influences the amount of energy a teenager uses when he/she is walking. During the pilot study I want to see if all the measurements and procedures are in place for the research. This might help your child to use less energy in walking and thus he/she would have more energy left to take part in everyday activities.

Name of Principal Investigator: Ninette du Plessis
Name of Organisation: University of Pretoria

This Informed Consent Form has two parts:

- **Information Sheet (to share information about the research with you)**
- **Certificate of Consent (for signatures if you agree to take part)**

You will be given a copy of the full Informed Consent Form

Important questions

Before I go on explaining the research, I need to know the answers to the following questions:

Is your child allergic to dust or animal hair? Yes / No (Circle correct answer)

Have any x-rays ever been taken of your child's neck? Yes / No (Circle correct answer)
If yes, please tell us the reason, and any other relevant information.

If you answered 'yes' to any of these questions, hippotherapy might not be a safe form of therapy for you. (Each individual answer will be investigated, for example the reason for the x-rays and what they revealed.)

Information Sheet

Introduction

I am Ninette du Plessis. I am an Occupational Therapist doing my Master's degree. I am doing research on hippotherapy. I am going to give you information and invite you to be part of this pilot study. You do not have to decide today whether or not you will participate in the pilot study. Before you decide, you can talk to anyone you feel comfortable with about the pilot study. There may be some words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask me.

Purpose of the pilot study

Diplegia is a form of cerebral palsy where your legs do not work as well as other teenager's legs or as well as the rest of your body. Teenagers with diplegia, use more energy to walk than normal children. Therapists doing therapy with the help of a horse believe that if horse riding is well planned by a therapist, it can help teenagers to walk better and use less energy. The reason why we are doing this pilot study is to find out if the research measurements and processes are in place for the research.

Participant selection

I am inviting three teenagers who might benefit from horse riding to take part in the pilot study. Therapists at around Pretoria have scanned their clients to see who fit into the group that we are studying.

Voluntary Participation

Your child's participation in this pilot study is entirely voluntary. It is your choice whether to participate or not. Whether you choose to participate or not will make no changes to your child's schooling, and thus all the services your child receive at the school will continue. This pilot study is not in any way related to the school or any school activity. You may change your mind later and stop participating, even if you agreed earlier.

Procedures

Because we do not know how hippotherapy will affect the amount of energy your child is using during walking, we need to test how much energy he/she uses in walking before and after hippotherapy. To do this, we will measure the heart rate of your children. This will be done with a heart rate monitor that is strapped unto your child and it is in no way painful or harmful. We shall also measure how fast your child is usually walking over a distance of 60m. This information will be used in a formula to work out how much energy is used. In addition to these tests an interview will be conducted to find out how your child experiences his/ her school performance in relation to energy expenditure. The testing will first take place at the school.

Thereafter your child will start horse riding. This will be done at Zoya's Stables out on Lynwood road. I shall inform you telephonically when your child will start horse riding, if you decide to be part of the pilot study. It is important to know that all the teenagers will be receiving 5 sessions of hippotherapy. The tests for the energy expenditure will be done again directly before and after each horse riding session. Interviews will be conducted at the school once the horse riding is done.

I must explain that I am qualified to do hippotherapy and I shall be looking after your child and the other participants very carefully during the pilot study.

If I am concerned about anything, I shall take your child out of the study if I am of opinion that it can be emotional or physical harmful to him/her. If there is anything you are concerned about or that is bothering you about the research or this pilot study please inform me immediately.

There will be a whole team helping me. I shall plan the therapy and do the therapy. Most of the time, I shall be on your child's one side while he/she is on the horse. One person will lead the horse. He takes the horse where we want the horse to go. Another person, called the side walker, will walk on your child's other side to help keep him or her safe. All the horses that we use are well trained and use to people with special needs.

Duration

The total pilot study will take 7 weeks. The first session will be done at your child's school. During the five weeks of hippotherapy it will be necessary for your child to come to the stables once a week. Although the therapy will only take 30 minutes each time, the total time at the stables will be more or less one and a half hours each time. This is necessary for doing the test before and after the therapy.

Clothing

Participants must at all times wear a safety hat. This will be available at the stables. The people taking part in the pilot study needs to wear long trousers and shoes (like school shoes). This is all necessary to limit injuries.

Risks

Even though all the horses and the team working with them are all well trained, accidents might still happen. Horses are animals and animals do not reason as people do, they might get a fright and that might lead to a person falling from a horse. Because horses are tall, a fall might lead to injuries. Both the therapist as well as the horse professional on the premises are trained in basic first aid and will assist your child in such an event.

While the possibility of this happening is very low, you should still be aware of the possibility. We will try to decrease the chances of this event occurring. Therefore, we need the information of your medical aid and doctor in case medical care should be needed. The nearest doctor from the stables is 15km away.

Benefits

If your child participates in this pilot study, he or she will have the following benefits:

Your child will be treated at no charge to you for a 5 week period. Hippotherapy is usually expensive due to the use of a team and a highly trained horse to treat one person at a time.

Hippotherapy has been proven to help younger children to improve their balance, gross motor skills and energy use. This was not tested in teenagers yet, but may benefit your child in the same way. This pilot study is likely to help us refine the research process to find out if teenagers will walk better after hippotherapy.

In addition, participation in horse riding is usually enjoyed by most participants.

Reimbursements

I will pay for your transport costs to and from Zoya's Stables, but you or your caregiver must arrange your own transport. An amount of R30 per session will be paid to each participant at the stables after each session. If travel expenses are more than this amount, and you can provide us with proof of that, then we will also cover the extra travel costs.

Confidentiality

The information that we collect from this pilot study will be kept confidential. Information about you and your child that will be collected during the pilot study will be put away and no-one but the researchers will be able to see it. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone.

The therapists and teachers at the school might know that your child is part of this pilot study but no information on how he or she is performing will be given to them.

The people working at the stables as well as the team helping with the therapy, all sign contracts that they may not speak to anyone about any of the participants. This is the rule with other therapy children as well and the people at the stables, helping us, are all aware of this rule of confidentiality.

The video's that will be taken of the interviews and the pre-treatment evaluation will only be shown to the people that are part of the research. This is needed to decide which horse will be the best horse for your child to ride. The videos from the interviews will be used to write up the different opinions of the teenagers taking part in the study.

Sharing the Results

The knowledge that we get from doing this pilot study will be shared with you through a meeting before the research will take place. Confidential information will not be shared.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so and refusing to participate will not affect you in any way. You may stop participating in the pilot study at any time that you wish without losing any of your rights.

Who to Contact

If you have any questions you may ask them now or later, even after the pilot study has started. If you wish to ask questions later, you may contact me at any time:

Ninette du Plessis,

telephone number: 083 324 3900

E-mail: ninette@lightprojects.co.za

Certificate of Consent

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily that my child may participate as a participant in this pilot study. I also give consent that my child may be videoed.

Print Name of Participant _____

Signature of Participant _____

Date _____
Day/month/year

If illiterate

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely.

Print name of witness _____ **AND Thumb print of participant**

Signature of witness _____

Date _____
Day/month/year



Statement by the researcher/person taking consent:

I have accurately read out the information sheet to the parent/guardian of the potential participant, and to the best of my ability made sure that the parent/guardian understands that the following will be done:

1. Measuring of heart rate during rest and walking before and after each hippotherapy session for the duration of the pilot study. This will be done once at the school.
2. Measuring of the participant's walking speed over a distance of 60m on the same days that the heart rate is taken.
3. Each participant will receive 5 sessions of hippotherapy (riding on a horse) once a week.
4. Two interviews will be conducted with each participant before and after the five week period of horse riding.

I confirm that the parent/guardian was given an opportunity to ask questions about the study, and that all the questions asked by the parent/guardian have been answered correctly and to the best of my ability. I confirm that the individual has not been forced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent _____

Signature of Researcher /person taking the consent _____

Date _____
Day/month/year

Annexure H.

Information and assent form for the pilot study



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences

School of Health Care Sciences
Department of Occupational Therapy

Assent Form for 7-18 year olds for the

The Effect of Hippotherapy on the Physiological Cost Index and on School Activities of Adolescents with Diplegia.

I would like to invite you to volunteer to be part of my pilot study on hippotherapy. Hippotherapy is therapy done on horseback by an occupational therapist. In my research I would like to see how hippotherapy influences the amount of energy a teenager uses when he/she is walking. During the pilot study I want to see if all the measurements and procedures are in place for the research. Taking part in the pilot study might help you to use less energy in walking and thus you would have more energy left to take part in your everyday activities.

Name of Principal Investigator: Ninette du Plessis

Name of Organisation: University of Pretoria

Participant selection

We are inviting participants who might benefit from horse riding. Therapists around Pretoria have scanned their clients to see who might benefit within the group that we are studying.

Three teenagers are going to take part in this pilot study, and it will last up to 7 weeks. All the teenagers will ride on horseback once a week for 5 weeks. You will be asked to visit the stables once a week during this 5-week period.

Purpose of the research

Diplegia is a form of cerebral palsy where your legs do not work as well as other teenagers' legs or as well as the rest of your body. Teenagers with diplegia use more energy to walk than non-disabled teenagers. Therapists doing therapy with the help of a horse believe that if horse riding is well planned by a therapist, it can help teenagers to walk better and use less energy. The reason why we are doing this pilot study is to find out if the research measurements and processes are in place for the research.

Voluntary Participation

Your participation in this pilot study is entirely voluntary. It is your choice whether to participate or not. Whether you choose to participate or not will make no changes to your schooling, and thus all the services you receive at the school will continue. This research is not in any way related to the school.

or any school activity. You may change your mind later and stop participating, even if you agreed earlier.

Procedures

Because we do not know how hippotherapy will affect the amount of energy you are using during walking, we need to test how much energy you use in walking before and after hippotherapy. To do this, we will measure your heart rate. This will be done with a heart rate monitor that is strapped onto you and it is in no way painful or harmful. We shall also measure how fast you usually walk over a distance of 60m. This information will be used in a formula to work out how much energy is used. The first testing will first take place at your school

Thereafter you will start horse riding. This will be done at Zoya's Stables out on Lynwood road I shall inform you telephonically when your horse riding will start, if you decide to take part in the study. It is important to know that all the teenagers will be receiving 5 sessions of hippotherapy. The tests for the energy expenditure will be done again directly before and after each horse riding session. Interviews will be conducted at the school once the horse riding is done.

Transport

I will pay for your transport costs to and from Zoya's Stables, but you or your parents must arrange your own transport. An amount of R30 per session will be paid to each participant at the stables after each session. If travel expenses are more than this amount, and you can provide us with proof of that, then we will also cover the extra travel costs.

Riding on horses

I must explain that I am qualified to do hippotherapy and I shall be looking after you and the other participants very carefully during the pilot study.

I shall also take you out of the pilot study if I am of opinion that it can be emotionally or physically harmful to you. If there is anything you are concerned about or that is bothering you about the research or the pilot study please inform me immediately.

There will be a whole team of people helping me. I shall plan the therapy and I shall also do the therapy. Most of the time I shall be on your one side while you are on the horse. Another person will lead the horse. He takes the horse where we want it to go. Another team member, called the side walker, will walk on your other side to help keep you safe. All the horses that we use are well-trained and used to people with special needs.

Clothing

Participants must at all times wear a safety hat while on the horse. This will be available at the stables. The people taking part in the study need to wear long trousers and shoes (like school shoes). This is all necessary to limit injuries.

Risks

Even though all the horses and the team working with them are all well-trained, accidents might still happen. Horses are animals and animals do not reason as people do; they might get a fright and that might lead to a person falling from a horse. Because horses are tall, a fall might lead to injuries. Both the therapist as well as the horse professional on the premises are trained in basic first aid and will assist you in such an event. The nearest doctor from the stables is 15km away.

While the possibility of this happening is very low, you should still be aware of the possibility. We will take care to decrease the chances of this event occurring. Therefore, we also need the information of your medical aid and doctor in case medical care should be needed.

Benefits

If you participate in this pilot study, you will have the following benefits:

You will be treated at no charge for a 5-week period. Hippotherapy is usually expensive due to the use of a team and a highly trained horse to treat one person at a time.

Hippotherapy has been proven to help younger children to improve their balance, gross motor skills and energy use. This has not been tested in teenagers yet, but it may benefit you in the same way. This pilot study is likely to help us refine the research process to find out if teenagers will walk better after hippotherapy.

In addition, participation in horse riding is usually enjoyed by most participants.

Confidentiality

The information that we collect from this research project will be kept confidential. Information about you that will be collected during the research will be put away safely, and no-one but the researchers will be able to see it. Any information about you will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key. It will not be shared with or given to anyone.

The therapists and teachers at the school might know that you are taking part in this research, but no information about you will be given to them.

The people working at the stables, as well as the team helping with the therapy, all sign contracts that they may not speak to anyone about any of the participants. This is the rule with other therapy children as well and the people at the stables helping us are all aware of this rule of confidentiality.

Sharing the Results

The knowledge that we get from doing this pilot study will be shared with you through a meeting before the research will take place. Confidential information will not be shared.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so, and refusing to participate will not affect you in any way. You may stop participating in the research at any time that you wish without losing any of your rights.

Who to Contact

If you have any questions you may ask them now or later, even after the study has started. If you wish to ask questions later, you may contact me at any time:

Ninette du Plessis

Telephone number: 083 324 3900

E-mail: ninette@lightprojects.co.za

Annexure I.

Permission from the department of education



GAUTENG PROVINCE

Department: Education
REPUBLIC OF SOUTH AFRICA

For administrative use:
Reference no. D2014/209

GDE RESEARCH APPROVAL LETTER

Date:	26 August 2013
Validity of Research Approval:	26 August 2013 to 20 September 2013
Name of Researcher:	Du Plessis N.
Address of Researcher:	94 Graskop Road Waterkloofhoogte 0181
Telephone Number:	012 347 1155 / 083 324 3900
Email address:	ninette@lightprojects.co.za
Research Topic:	The effect of hippotherapy on energy expenditure during ambulation of dipleptic adolescents
Number and type of schools:	TWO LSEN Schools
District/s/HO	Gauteng East

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

Handwritten signature and date:
2013/08/28

Making education a societal priority

Office of the Director: Knowledge Management and Research

9th Floor, 111 Commissioner Street, Johannesburg, 2001
P.O. Box 7710, Johannesburg, 2000 Tel: (011) 355 0595
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Annexure J.

Information leaflet and informed consent



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department of Occupational Therapy

*Information Leaflet & Informed Consent to
Parents/Guardians about
Intervention Research*

The effect of hippotherapy on the Physiological Cost Index and on school activities of adolescents with diplegia.

Informed Consent form for parents of adolescent with diplegia

I would like to invite your child to volunteer to be part of my research on hippotherapy. Hippotherapy is therapy done on horseback by an occupational therapist. I would like to see how hippotherapy influences the amount of energy a teenager uses when he/she is walking. This might help your child to use less energy in walking and thus he/she would have more energy left to take part in everyday activities.

Name of Principal Investigator (Researcher): Ninette du Plessis
Name of Organization: University of Pretoria

This Informed Consent Form has two parts:

- Information Sheet (to share information about the research with you)
- Informed Consent (for signatures if you agree to take part)

You will be given a copy of the full Informed Consent Form

Important questions

Before I go on explaining the research, I need to know the answers to the following questions:

Is your child allergic to dust or animal hair? Yes / No (Circle correct answer)

Have any x-rays ever been taken of your child's neck? Yes / No (Circle correct answer)
If yes, please tell us the reason, and any other relevant information.

Information Sheet (to share information about the research with you)

Introduction

Your child is invited to volunteer for a research study, should you as the parent/guardian agree. This information leaflet is to help you to decide if you would like your child to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this leaflet, do not hesitate to ask the investigator. You should not agree for your child to take part unless you are completely happy about all the procedures involved. In the best interests of your child's health, it is strongly recommended that you discuss with or inform your personal doctor of your child's possible participation in this study, wherever possible. You can talk to anyone you feel comfortable with about the research.

I am Ninette du Plessis, and I am an Occupational Therapist doing my Master's degree. I am doing research on hippotherapy. Hippotherapy is therapy using horse riding as therapy. I want to see how hippotherapy influences the amount of energy a teenager uses when he/she is walking. I am going to give you information and invite you to be part of this research.

Purpose of the research

Diplegia is a form of cerebral palsy where one's legs do not work as well as other people's legs or as well as the rest of your body. Teenagers with diplegia, use more energy to walk than non-disabled teenagers. Therapists doing hippo therapy believe that it can help teenagers to use less energy in walking. The reason why we are doing this research is to find out if your child will use less energy in walking, after horse riding and to find out how your child experience school functioning.

Participant selection

I am inviting learners from your child's school and one other school who might benefit from horse riding. Therapists at the school have scanned the learners to see who fit into the group that we are studying. About 14 teenagers are going to take part in this study.

Voluntary Participation

Your child's participation in this research is entirely voluntary. It is your choice whether to participate or not. Whether you choose to participate or not will make no changes to your schooling, and thus all the services you receive at the school will continue. This research is not in any way related to the school or any school activity. You may change your mind later and stop participating in the research, even though you might have earlier agreed to it.

What is the duration of this trial?

If you decide to take part, your child will be one of approximately 14 participants. The study will last for up to 15 weeks for the first two participants and up to 21 weeks for the last two participants. All the teenagers will ride on horseback once a week for a 12 week period. How this will work is explained below. You will be asked to visit the stables once a week for a 12 week period. Your child's schedule will be given to you should you agree to take part.

Explanation of procedures to be followed

Because we do not know how hippotherapy will affect the amount of energy your child is using during walking, we need to test how much energy he/she uses in walking before and after hippotherapy. To do this, we will measure the heart rate of your teenager. This will be done with a heart rate monitor that is strapped onto your teenager and it is in no way painful or harmful. We shall also measure how fast your teenager is normally walking over a distance of 60m. This information will be used in a formula to work out how much energy is used. Two interviews with your child will also be conducted during the first phase of the study; the interviews will be recorded on video. The testing will first take place at the school once a week for three weeks.

Thereafter, two teenagers per week will start horse riding. This will be done in the afternoons at the stables out on Lynwood Road. The other teenagers will still undergo tests once a week at the school. When each teenager is to start riding on the horses will be selected by chance, as if by tossing a coin. I shall inform you per telephone when your child will start riding, if you decide to be part of the study. It is important to know that all the teenagers will be receiving 12 sessions of hippotherapy. The only difference is that some teenagers will be tested over a longer period of time than others; this will be explained during the interview. The tests will be done once more directly before and again after each horse riding session. During the phase two more interviews will be held with your child at the school and one interview the week after the period of horse riding.

I must explain that I am qualified to do hippotherapy and I shall be looking after your child and the other participants very carefully during the study. Some people have never been on horseback before and feel uncertain. It is normal to feel afraid. I shall show them everything at the stables before they get onto the horse and help them to get onto the horse as well. I shall be at your child's side all the time.

Some people are very afraid of horses. If your child is afraid and this does not get better, the therapy will not be enjoyable or beneficial to him or her. If I am concerned about anything or if your child is, or stays afraid of horses after the first two sessions, I might make changes such as to take your child of the horse and let him or her brush or lead the horse until he/she feels more comfortable with it. I may also decide to take your child out of the study if I am of opinion that it can be emotional or physical harmful to him/her. If there is anything you are concerned about or that is bothering you about the research please inform me immediately.

There will be a whole team helping me. I shall plan the therapy and do the therapy. Most of the time, I shall be on your child's one side while he/she is on the horse. One person will lead the horse. He takes the horse where we want the horse to go. Another person, called the side walker, will walk on your child's other side to help keep him or her safe. All the horses that we use are well trained and used to people with special needs.

Who can take part?

We are inviting teenagers from your child's school and one other school who might benefit from horse riding. Therapists at the school have scanned the learners to see who falls into the group that we are studying.

Has the trial received ethical approval?

This clinical trial Protocol was submitted to the Faculty of Health Sciences Research Ethics Committee, University of Pretoria and written approval has been granted by that Committee. The study has been structured in accordance with the Declaration of Helsinki (last update: October 2008), which deals with the recommendations guiding health professionals in biomedical research involving human/subjects. A copy of the declaration may be obtained from this investigator should you wish to review it. The Research Ethics Committee can also be telephonically contacted on (012) 354 1330 or (012) 354 1677.

What are your child's rights as a participant in this trial?

Your child's participation in this research is entirely voluntary. It is your choice whether to participate or not. Whether you choose to participate or not will make no changes to your child's usual schooling, and thus all the services you receive at the school will continue. This research is not in any way related to the school or any school activity. You may change your mind later and stop participating (withdraw) at any time before or during the research.

The investigator retains the right to withdraw your child from the study if it is considered to be in his or her best interest. If it is detected that you did not give an accurate history or did not follow the guidelines of the trial and the regulations of the trial facility, your child may be withdrawn from the trial at any time.

Is alternative treatment available?

Alternative treatment in the form of occupational therapy, physiotherapy or speech therapy is often used to treat children with diplegia. If you decide not to take part in this study any other therapy may continue and it is possible that the therapist conducting the research might refer you for other therapy as well.

Can any of these trial procedures result in discomfort or inconvenience?

Wearing the heart rate monitor is not uncomfortable or painful at all. Riding a horse might be a new and unsettling experience for some participants and they will be monitored carefully.

Clothing

Participants must at all times wear a safety hat. This will be available at the stables. The people taking part in the study needs to wear long trousers and shoes (like school shoes). This is all necessary to limit injuries.

What are the risks involved in this trial?

Even though all the horses and the team working with them are all well trained accidents might still happen. Horses are animals and animals do not reason as people do, they might get a fright and that might lead to a person falling from a horse. Because horses are tall, a fall might lead to injuries. Both the therapist as well as the horse professional on the premises are trained in basic first aid and will assist you in such an event.

While the possibility of this happening is very low, you should still be aware of the possibility. We will take care to decrease the chances of this event occurring. Therefore we also need the information of your medical aid and doctor in case medical care should be needed.

The University has limited insurance available to assist you in the case of a unfortunate study related injury.

Benefits

If your child participates in this research, he or she will have the following benefits:

- Your child will be treated at no charge to you for a 12 week period. Hippotherapy is usually expensive due to the use of a team and a highly trained horse to treat one person at a time.
- Hippotherapy has been proven to help younger children to improve their balance, gross motor skills and energy use. This was not tested in teenagers yet, but may benefit your child in the same way. This study is likely to help us find out if teenagers will walk better after hippotherapy.
- In addition, participation in horse riding is usually enjoyed by most participants.

Discontinuation of trial treatment

Discontinuation of this trial will not in any way harm your child, but it might not result in the same benefits that participants might experience who continue the 12-week treatment phase.

Transport, Insurance and Financial Arrangements

You will receive transport money to and from Zoya's Stables, but you must arrange your own child's transport. An amount of R30 per session will be paid to each participant at the stables after each session. If travel expenses exceed this amount and you can provide us with proof thereof, we will also cover the additional. You will not be given any other money or gifts to take part in this research.

The hippotherapy will be provided free of charge to all the participants. Neither you, nor your medical scheme will be expected to pay for any expenses directly related to the treatment.

The researcher or the University of Pretoria assumes no obligation to pay for the medical treatment of other injuries or illnesses, regardless of whether they are directly or indirectly related, or as a result of the research.

Confidentiality

The information that we collect from this research project is strictly confidential. Information about you and your child that will be collected during the research will be put away and no-one but the researchers will be able to see it. Any information about you or your child will have a number on it instead of your name. Only the researchers will know what your number is and we will lock that information up with a lock and key at the researcher's residence. It will not be shared with or given to anyone. Data that may be reported in scientific journals will not include any information which identifies your child as a patient in this research.

The therapists and teachers at the school might know that your child is part of this research but no information on how he or she is performing will be given to them.

The people working at the stables as well as the team helping with the therapy, all sign contracts that they may not speak to anyone about any of the participants. This is the rule with other therapy children as well and the people at the stables, helping us, are all aware of this rule of confidentiality.

The video's that will be taken of the interviews and the pre-treatment evaluation will only be shown to the people that are part of the research. This is needed to decide which horse will be the best horse for your child to ride. The videos from the interviews will be used to write up the different opinions of the teenagers taking part in the study.

Sharing the Results

The knowledge that we get from doing this research will be shared with you through a meetings before it is made widely available to the public. Confidential information will not be shared. After the meeting, we will publish the results in order that other interested people may learn from our research.

Right to Refuse or Withdraw

Your child does not have to take part in this research if you do not wish to do so and refusing to participate will not affect him or her in any way. You may stop participating in the research at any time that you wish without losing any of your rights, or being discriminated against you or your child.

Who to Contact

If you have any questions you may ask them now or later, even after the study has started. If you wish to ask questions, you may contact us at any time:

Ninette du Plessis,
telephone number: 083 324 3900
E-mail: ninette@lightprojects.co.za

Informed Consent for Parents/ Guardians (if you and your child agree to take part)

I hereby confirm that I have read the foregoing information, or it has been read to me, and I have received and understood the above written information (Patient Information Leaflet and Informed Consent) regarding the research.

I consent voluntarily that my child may participate as a participant in this research. I also give consent that a video recording of my child may be made.

I am aware that the results of the trial, including personal details regarding my child's sex, age, date of birth, initials and diagnosis will be anonymously processed into a trial report.

I may, at any stage, without prejudice, withdraw my consent and participation in the trial. I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the trial.

Parent/Guardian(s) Name

(Please print)

Parent/Guardian(s) Signature

Date _____

Participant's Name

(Please print)

Participant's Signature*

Date _____

(*Minors competent to understand must participate as fully as possible in the entire procedure.)

Investigator's Name

(Please print)

Investigator's Signature

Date _____

Witness's Name _____ **Witness's Signature** _____ **Date** _____

Verbal Patient Informed Consent (applicable when patients cannot read or write)

I, the undersigned, _____, have read and have explained fully to the parent, named _____, and/or his/her relative, the patient information leaflet, which has indicated the nature and purpose of the research in which I have asked the parent's child to participate. The explanation I have given has mentioned both the possible risks and benefits of the research. The parent indicated that he/she understands that his/her child will be free to withdraw from the research at any time for any reason, to which the parent agrees.

I hereby certify that the parent and his/her child (where possible) has agreed to participate in this research.

Parent/Guardian(s) Name

(Please print)

Investigator's Name

(Please print)

Investigator's Signature

_____ **Date** _____

Witness's Name _____ **Witness's Signature** _____ **Date** _____
(Witness - sign that he/she has witnessed the process of informed consent)

AND Thumb print of Parent/ Guardian



Annexure K.

Information guide for information session



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department Occupational Therapy

*Information Guide for Information Session with the
Parents/Guardians and Adolescents*

The Effect of Hippotherapy on the Physiological Cost Index and on School Activities of Adolescents with Diplegia.

Name of Principal Investigator: Ninette du Plessis

1. Introduction

Researcher introduces herself and meets the parents/guardians and adolescent formally.

2. Question 1

Do any of you mind if we talk in the presence of both you as parents and you as their child? (Should there be an objection in this regard; alternative arrangements will be made for discussions to take place separately)

3. Question 2

Have you read the information leaflet? (Ask this question to both the parents/guardians and to the adolescent).

4. Question 3:

What do you understand under the following main points in the research? (any point that is not clearly understood will be re-explained)

- **Purpose of the research**
- **Participant selection**
- **Voluntary Participation**
- **Procedures** such as measuring the heart rate, walking speed and five interviews.
Do you know when, how and where these procedures will take place?
- **Intervention in the form of horse riding**
- **Duration of the study.**
- **Benefits**
- **Transport and Reimbursements**
- **Confidentiality**
- **Sharing the Results**
- **Right to Refuse or Withdraw**

5. Question 4

Do you have any concerns regarding the use of horses? (The researcher must at this point explain both the risks involved as well as precautions taken to limit the risks as far as possible. The right of the researcher to end the participation should an adolescent be afraid or should the hippotherapy be harmful in any way will be explained.)

6. Question 5 (directed to parents/guardians)

Is your child allergic to dust or animal hair?

7. Question 6 (directed to parents/guardians)

Has your child ever received therapy on horseback before?

8. Question 7 (directed to parents/guardians)

Have any x-rays ever been taken of your child's neck?

9. Question 8

Do you have any questions or concerns?

10. Question 9 (directed to both the parents/guardians and the adolescent)

Do you want to participate in this study or do you need more time to think about it?

Annexure L.

Information leaflet and assent form for intervention research



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department of Occupational Therapy

*Information Leaflet and Assent Form for Intervention
Research*

The Effect of Hippotherapy on the Physiological Cost Index and on School Activities of Adolescents with Diplegia.

I would like to invite you to volunteer to be part of my research on hippotherapy. Hippotherapy is therapy done on horseback by an occupational therapist. I would like to see how hippotherapy influences the amount of energy a teenager uses when he/she is walking. This might help you to use less energy in walking and thus you would have more energy left to take part in your everyday activities.

Name of Principal Investigator: Ninette du Plessis
Name of Organisation: University of Pretoria

This Information Leaflet and Assent Form has two parts:

- **Information Sheet (to share information about the research with you)**
- **Assent (for signatures if you agree to take part)**

Information Sheet (to share information about the research with you)

You are invited to volunteer for a research study, should you agree. This information leaflet is to help you to decide if you would like to participate. Before you agree to take part in this study you should fully understand what is involved. If you have any questions, which are not fully explained in this leaflet, do not hesitate to ask the investigator. You should not agree to take part unless you are completely happy about all the procedures involved. You can talk to anyone you feel comfortable with about the research.

About 14 teenagers are going to take part in this study, and it will last up to 15 weeks for some participants, and up to 21 weeks for others, but all the teenagers will ride on horseback once a week for 12 weeks. You will be asked to visit the stables once a week for a 12-week period.

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. Whether you choose to participate or not will make no changes to your schooling, and thus all the services you receive at the school will continue. This research is not in any way related to the school or any school activity. You may change your mind later and stop participating, even if you agreed earlier.

Because we do not know how hippotherapy will affect the amount of energy you are using during walking, we need to test how much energy you use in walking before and after hippotherapy. To do this, we will measure your heart rate. This will be done with a heart rate monitor that is strapped onto you and it is in no way harmful, painful or even uncomfortable. We shall also measure how fast you usually walk over a distance of 60m. This information will be used in a formula to work out how much energy is used. The testing will first take place at school once a week for three weeks.

Some people are very afraid of horses. If you are afraid and this does not get better, the therapy will not be enjoyable or beneficial to you. If I am concerned about anything or if you are, or stay afraid of horses after the first two sessions, I might make changes such as to take you off the horse and let you brush or lead the horse until you feel more comfortable with it. I may also decide to take you out of the study if I am of opinion that it can be emotional or physical harmful to you. If there is anything you are concerned about or that is bothering you about the research please inform me immediately.

There will be a whole team helping me. I shall plan the therapy and do the therapy. Most of the time, I shall be on your one side while you are on the horse. One person will lead the horse. He takes the horse where we want the horse to go. Another person, called the side walker, will walk on your other side to help keep you safe. All the horses that we use are well trained and used to people with special needs.

Wearing the heart rate monitor is not uncomfortable or painful at all. Riding a horse might be a new and unsettling experience for some participants and they will be monitored carefully. While the possibility of this happening is very low, you should still be aware of the possibility. We will take care to decrease the chances of this event occurring. Therefore we also need the information of your medical aid and doctor in case medical care should be needed.

You do not have to take part in this research if you do not wish to do so, and refusing to participate will not affect you in any way. You may stop participating in the research at any time that you wish without losing any of your rights.

If you have any questions you may ask them now or later, even after the study has started. If you wish to ask questions, you may contact us at any time:

Ninette du Plessis,
telephone number: 083 324 3900
E-mail: ninette@lightprojects.co.za

Assent (for signatures if you agree to take part)

If you sign at the bottom it will mean that you have read this paper, and that you would like to be in this study.

Participant's Name _____
(Please print)

Participant's Signature _____ **Date** _____

Investigator's Name _____
(Please print)

Investigator's Signature _____ **Date** _____

Witness's Name _____ **Witness's Signature** _____ **Date** _____

Annexure M.

Confidentiality agreement



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department of Occupational Therapy

*Agreement with involved parties to maintain Patient/
Customer Confidentiality*

The Effect of Hippotherapy on the Physiological Cost Index and on School Activities of Adolescents with Diplegia.

Medical Confidentiality Agreement

Patient's health records and customer's personal information are confidential.

I understand that I may become aware of patient or customer information in the course of performing my duties during therapeutic and other activities related to the research performed by N. Du Plessis (Occupational Therapist). I am prohibited from divulging or communicating this information both during and after my involvement.

I agree to respect the patient's right to confidentiality and privacy. I agree to access patient's personal health information only as permitted in the performance of my duties or as otherwise directed by the therapist.

I agree to preserve the confidentiality of all clinical or patient information and to not divulge this information in any form, except where authorised by the patient or required by law. Any breach, on or off duty, of this agreement will be taken seriously. Any violation can or may result in legal or disciplinary action including dismissal and court action.

I _____ (name of Involved Party), acknowledge that I have read the above confidentiality agreement and understand my responsibilities as they pertain to the confidentiality of personal information and agree to the principles of this agreement.

Signature of Involved Party

Signature of Occupational Therapist
(for the University of Pretoria)

Date

Annexure N.

Declaration for storage of research data/ documents



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences
School of Health Care Sciences
Department of Occupational Therapy

Declaration for Storage of Research Data/ Documents

**The Effect of Hippotherapy on the Physiological Cost Index
and on School Activities of Adolescents with Diplegia.**

Protocol No. _____

**Principal Investigator(s) Declaration for the storage of research data
and/or documents**

I, the Principal Investigator(s), Ninette du Plessis
of the following trial/study titled:

**The Effect of Hippotherapy on the Physiological Cost Index
and on School Activities of Adolescents with Diplegia.**

will be storing all the research data and/or documents referring to the above mentioned
trial/study at the following address:

The Occupational Therapy department of the University of Pretoria.

**I understand that the storage for the abovementioned data and/or documents must
be maintained for a minimum of 15 years from the commencement of this
trial/study.**

START DATE OF TRIAL/STUDY: Beginning of second school term 2013

END DATE OF TRIAL/STUDY: 21 Weeks after the beginning of the study

UNTIL WHICH YEAR WILL DATA WILL BE STORED: 2028

Name: Ninette du Plessis

Signature: _____

Date: August 2013

Annexure O.

Similarity report

Turnitin Originality Report



Hippotherapy 28 October 2015 by N (Ninette) du Plessis

From Full Dissertation (ART 890 Y1 2015 _93495_1)

- Processed on 29-Oct-2015 11:07 SAST
- ID: 589715798
- Word Count: 40460

Similarity Index 4%

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Annexure P.

Results of each participant

Combined results of each participant

- a. Participant 1: In the qualitative part of the study, Participant 1's answers in relation to feeling tired gradually indicated positive change throughout the study. Self-reported improvements in balance, more frequent walking and improved sport participation were reported during interview three, four and five.

In Participant 1, no significant changes were noted in the quantitative part of the study, but the participant reported several changes during the qualitative part of the study.

No official interview was conducted with the parents or guardians of the participants. Nonetheless, in the day to day conversation, the mother of Participant 1 said that this year (after the HT started) was the first time that her child ever got selected for a team sport, as her child is now able to run without falling. She thought that this improvement must be due to improvement of balance due to the HT. Apparently, this participant also stopped complaining about pain in the knees, a complaint the mother said was chronic.

- b. Participant 3 showed a stable PCI throughout the study during both the baseline phase and the intervention phase. The statistically significant increase in walking speed during the baseline phase cannot be linked to HT as no HT was conducted during that time frame. A logical explanation might be that the athletic training that took place at the school during the baseline phase had an influence on the walking speed of Participant 3. This participant took part in the SA athletics championships: athletics training was therefore taking place every day of the week during the baseline phase of the study.

In seven of the 12 HT sessions, the PCI values were lower directly after the HT, indicating that some effect was caused by the HT within sessions. Yet again, more qualitative changes were mentioned than indicated through the quantitative measurements.

Within the qualitative part of the study, participant 3 gave different answers to question five about the ability to sit up straight in class that suggested subtle change in this area. Participant 3 rationalised the answers in relation to fatigue

by giving reasons for fatigue rather than to answer directly as to how often fatigue was experienced. Again, the subtle changes in the answers indicated change in this regard. Other changes that were reported by Participant 3 were mostly linked to participation in sports. During the five HT sessions, Participant 3 told the researcher that balance improved to such an extent that being fastened before throwing the javelin was not of utmost importance anymore, as falling from the chair while throwing lessened. Better concentration, longer periods of uninterrupted sleep and being less stiff in the pelvis were all aspects that, according to Participant 3, changed during the course of the study and might be linked to the HT that was conducted.

- c. Participant 4 had a stable baseline and during the intervention phase, the PCI values, which were measured directly before each HT session, showed a steady downward trend that was not statistically significant. In six of the 12 intervention sessions, the PCI directly after the intervention was lower than the PCI before the intervention. This might indicate that HT had an effect on this participant within the session, but chances cannot be ruled out with certainty.

When the walking speed of Participant 4 was analysed, the walking speed proved to be stable during baseline with only one higher value during baseline three. During the intervention phase, the walking speed showed a statistically significant increase. For Participant 4, HT had a definite influence on walking speed from one session to the next even though no changes were reported during the qualitative part of the study. The researcher did get the impression that the participant did not at all times fully comprehend the questions that were asked. Despite further explanation, the participant mostly answered with: “Fine, ma’am...”

- d. Participant 5, demonstrated a downward baseline trend in PCI, followed by large variations during the intervention phase. No conclusions on PCI could be drawn from this data. Nonetheless, the walking speed directly after each HT session increased in eight of the 12 sessions. Five of these increases were more than 3 m/min, which is a small meaningful change (Chui et al. 2012). Interestingly, the PCI in four of these five sessions was also lower directly after the HT, indicating a change in ambulation. But because it only occurred in four sessions, no conclusions can be drawn from it.

During the qualitative part of the study, Participant 5's answers to the question "how often did you feel tired during the past week," changed throughout the study from feeling tired in the afternoons to not feeling tired at all. This answer indicated a positive change in this regard. The first reaction to the question: "Did anything change since you started horse riding?" was: "No." but after further exploratory questions from the researcher, it was reported that walking became easier after HT was started. This answer does not reflect a definite change in Participant 5's ambulatory functioning and confirms the inconclusive findings of the quantitative part of the study.

- e. Participant 8 was not using any assistive devices for ambulation. This was the only participant that displayed a statistically significant downward trend in PCI during the intervention phase following a stable baseline. Interestingly, less change was noted within Participant 8's sessions than with any other participant, and gradual change occurred from session to session.

Participant 8 also showed an upward trend in walking speed during the baseline phase, but it was only during the intervention that the upward trend in walking speed was statistically significant.

During the qualitative part of the study, Participant 8's answers to the questions did not indicate any confirmation of the quantitative changes that were noted. Participant 8 did, however, mention changes in sitting posture in answer to the question if anything changed since horse riding started. But in answer to question five that was directly related to sitting upright in class, the participant did not give an indication of change.

- f. Participant 9 showed a visual downward trend in PCI during intervention that was not statistically significant. As a matter of fact, the baseline phase also showed a downward trend. No conclusions could be drawn from either of these. The walking speed was faster after HT in nine of the 12 sessions and six times it was accompanied by a lower PCI after the HT. Even though this might be an indication of change in ambulation patterns, only small meaningful changes were accomplished in three of these measurements and one substantial meaningful change were seen (Chui et al. 2012). Such little change renders no conclusive power to the observation.

Visually, Participant 9 showed large improvements in ambulation patterns. This observation was confirmed by the answers given by Participant 9 in the qualitative part of the study. Participant 9 progressed from mostly using the wheelchair or reversed Kay-walker for ambulation in the classroom to moving around the classroom by holding onto furniture. Even though the participant said that moving around in this way was more difficult than using the wheelchair, walking was preferred due to space-limitations in the classroom.

To sit still and listen during class was an ability that progressed through the study but the participant linked the change to the influence of medication. Working speed gradually changed and Participant 9 reported in the last interview that working speed was defiantly faster than that of the peers but as this was the only participant that indicated working speed as a result of HT, it was not included in the general qualitative findings. A gradual decline in fatigue was noted in the answers related to how often the participant felt tired during the week. Other changes that were reported by Participant 9 was better abduction of the legs that led to the ability to climb into the bath independently from both sides. This statement of the participant was confirmed by the mother. ADL activities at school were reported to be easier towards the end of the study than in the beginning of the study.

- g.** Participant 10 used momentum and mass patterns to ambulate both when walking and in the wheelchair. The main therapeutic goal for this individual participant was to gain more controlled movement during ambulation. This therapeutic goal was not directly measured within the study but could be deduced from the fact that less variation was seen between data points as the study progressed. As a reduction in walking speed could indicate more control as well as more frequent falls (which were not counted), walking speed could not be used as indication of a more stable ambulatory pattern. A better indication of change was the answers given by Participant 10 in the qualitative part of the study. Positive change was reported in ambulation around class, on the playground, faster working speed during class work and more functional reaching during the course of the study. Participant 10 reported less falling during an informal conversation that was not recorded as part of any interview.

- h.** After an unstable baseline, Participant 11 had a visual downward trend in PCI values taken directly before each HT session. This trend was not statistically significant. This participant, who did not make use of any assistive device during ambulation, had a statistically significant increase in walking speed (taken directly before each HT-session) but did not mention changes in ambulation during the interviews. The only positive change noticed by the participant was a change in sitting posture that, according to the participant, was due to development of stronger abdominal muscles. Participant 11 further had a substantially faster walking speed directly after HT in four of the 12 HT sessions and a small meaningful change in walking speed in two instances.
- i.** Participant 12 demonstrated a statistically significant downward trend in the PCI measurements taken during the baseline phase as described earlier in this section. What makes this decline even more interesting is the combined incline in walking speed during the same time period. This individualised observation cannot be linked to HT as it occurred during the baseline phase. As this participant did not take part in sport related activities or other therapy, the improvement raised questions about the effect of walking once a week over a distance of 60 m. During the intervention phase of the study (when HT was applied), both PCI and walking speed reached a plateau. During the qualitative part of the study, the participant reported that all movement (in arms and legs) became easier since horse riding started. The answers to the question about ambulation in the classroom changed gradually through the study from being totally wheelchair dependant to only walking in the classroom when more frequent walking was needed, even though the participant still indicated that the wheelchair was preferred above walking.
- j.** Participant 13 did not show a statistically significant decline in PCI values taken directly before HT, although a decline was visually depicted on the graph. This followed a stable baseline. The personal change that was noted in this particular participant was that the walking speed increased during the intervention phase and was noted in the measurements taken directly before each HT session. The change was statistically significant. This was also the participant with the highest number of small meaningful improvements in walking speed directly after each HT session, namely six, and one substantially meaningful change, making it an improvement in walking speed

in seven out of the 12 sessions. In six of these sessions the PCI values were also lower directly after the HT session than directly before the HT.

In the qualitative part of the study Participant 13 reported that mounting and dismounting the horse became easier throughout the course of the study. “Looser legs” was the description used by the participant to describe the feeling directly after horse riding and “straighter legs” were also reported. These descriptions might indicate that muscle tone was influenced and therefore confirm the quantitative data seen directly after seven of the HT sessions.