Perceptible learning: monitoring motor learning by individual learning curves

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This study investigates the shape of task specific learning curves of normal children between the age of 4-8 years for three age related frequently used functional skills: placing pegs, beanbag toss and long-jump: information about the slope and the...

Ethical review	Approved WMO	
Status	Pending	
Health condition type	Other condition	
Study type	Observational non invasive	

Summary

ID

NL-OMON30961

Source ToetsingOnline

Brief title Motor learning curves

Condition

• Other condition

Synonym

normal healthy children

Health condition

gezonde controle groep

Research involving Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Sint Radboud **Source(s) of monetary or material Support:** Ministerie van OC&W

Intervention

Keyword: children, learning curves, motor learning, pediatric physical therapy

Outcome measures

Primary outcome

Scores for placing pegs (amount per minute), beanbag toss (amount of 25 correctly tossed) and long-jump (distance in centimeters) will be used to map the learning curves. The steepness and ceiling levels of the curves and the decrement in variability will be determined. Differences between pre- and post training measurements of the M-ABC will be compared. The factors possible of influence on the individual learning curve, such as personal factors (age, height, weight and gender), the baseline scores on the related M-ABC task and the amount of sport (guestionnaire) will be determined.

For each task a curve-fit procedure will be done to find the most appropriate model for norm-referenced learning curves using a statistical model that contains two phases: modeling from the reference values out of the norm population by state-space modeling (Standard Error of Measurement state-space model) and on the other site the optimal estimation from individual curves using a Kalman filter and smoother.

To determine whether personal factors (age, gender, length and weight) or the baseline scores on de M-ABC related task have a relationship with the steepness

and ceiling values of the learning curve, these factors will be used in the

model to support the estimation.

To determine possible transfer effects from learning the scores on the

retention tests will be compared to the scores on the transfer tests.

Secondary outcome

not aplicable

Study description

Background summary

Literature defends that the effect of motor learning is task specific. Also, literature suggests those tasks have to be measurable in such a way that they give insight in the progression of learning. In pediatric physical therapy this insight in the progression of learning will fulfill three goals: 1) it gives the therapist insight in how to plan their therapy more systematically, 2) it can be used as feedback to the child, 3) it gives insight in the effectiveness of intervention. The most appropriate form of feedback is the Knowledge of Results (KR): information with regard to the result of the child*s performance. Learning curves give insight in the changes in skilled performance over time in contrast to motor performance tests, which reflect the level of skilled performance at one moment. Theoretically it is defendable that lower scores on motor tests can be associated with lower motor learning potential in the neurological and/or physiological system (the ceiling level will be lower than in normal children), less learning capacity in the neurological system (less steeper learning curve than in normal children), or less motor learning experience (low starting level but learning curve is *normal* compared to normal children). In this way, learning curves will be more sufficient to guide a pediatric physical therapy intervention than motor performance tests. From literature and previous pilot studies we know that learning curves allow evaluating and interpreting intervention effects. However, to get insight in the progression of learning and the maximum learning potential of children in pediatric rehabilitation we need a gold standard: task specific and age-related learning curves of normal children in the same age group and the same gender.

Study objective

This study investigates the shape of task specific learning curves of normal children between the age of 4-8 years for three age related frequently used

functional skills: placing pegs, beanbag toss and long-jump: information about the slope and the ceiling value of these curves will be explored. Moreover, we will study variability between children in relation to the task and analyze the influence of particular child factors (e.g. age, length, weight) and performance level at the start of the training.

Study design

This is a non-randomized pilot intervention study with a pre- and post test in 60 healthy children from an elementary school. The children will be tested with three items of the Movement ABC to determine their motor performance level in manual dexterity, ball skills and static and dynamic balance. These tests are: placing coins in a groove, rolling a ball into a goal and jumping over a cord. After that, they will be trained to learn three selected motor skills: placing pegs, beanbag toss and long-jump. During training the results of skill performance will be scored for each skill separately resulting in task specific learning curves. The skills will be trained and measured at school two times a week, in a period of three weeks, moreover, the children receive a home-work book and a bag with materials to train once a day during this period. In the last session, a retention test is done and the three items of the M-ABC will be tested again as transfer tests.

Study burden and risks

The children will be measured during activities, which are part of their natural behavior. There are no specific risk factors. Extend of the burden for the child is minimal. Extend of the burden for the parents is limited. The parents are totally free to choose for participation. From the teachers some time investment for the organization is asked to avoid interference with school activities.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age Children (2-11 years)

Inclusion criteria

Age: 4-8 years old- No known health problems, influencing motor performance

Exclusion criteria

Health problems of influence on motor performance parents who are not able to guide their children adequately with their every day practicing no permission through Informed Consent

Study design

Design

Study type: Observational non invasive		
Masking:	Open (masking not used)	
Control:	Uncontrolled	
Primary purpose:	Diagnostic	

Recruitment

NL Recruitment status:

Pending

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Start date (anticipated):	01-09-2007
Enrollment:	60
Туре:	Anticipated

Ethics review

Approved WMOApplication type:First submissionReview commission:CMO regio Arnhem-Nijmegen (Nijmegen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register CCMO

ID NL19119.091.07