

# Frequently Asked Questions (FAQs) Related to the GMFM-88, GMFM-66, GMFCS, GMPM & the Motor Growth Curves

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## CLASSIFICATION:

### FAQs relating specifically to the GMFCS:

#### **Q. What is the GMFCS?**

A. The GMFCS, or Gross Motor Function Classification System, is a five-level classification that differentiates children with cerebral palsy based on the child's current gross motor abilities, limitations in gross motor function, and need for assistive technology and wheeled mobility. The GMFCS contains 4 age bands (under 2 years, 2-4 years, 4-6 years and 6-12 years), and is intended for use with children to 12 years of age. Work is currently underway to extend the classification through adolescence.

Palisano, R., Rosenbaum, P., Walter, S., Russell, D., Wood, E. & Galuppi, B. (1997). Development and validation of a Gross Motor Function Classification System for children with Cerebral Palsy. *Developmental Medicine and Child Neurology*, 39, 214-223.

#### **Q. Who can use the GMFCS?**

A. Physical therapists, occupational therapists, physicians, and other health service providers familiar with movement abilities of children with cerebral palsy can use the GMFCS. Parents of children with cerebral palsy aged 6 to 12 years have been shown to be accurate in classifying their children using an adapted version of the GMFCS (Morris, Galuppi and Rosenbaum, 2004). Work is currently being conducted with parents of children 2 to 4 years and 4 to 6 years of age.

Morris, C., Galuppi, B.E., & Rosenbaum, P.L. (2004). Reliability of family report for the Gross Motor Function Classification System. *Developmental Medicine and Child Neurology*, 46, 455-460.

#### **Q. How long does it take to learn the GMFCS?**

A. Therapists and physicians can reliably use the GMFCS with no training simply by reading the criteria.

**Q. How long does it take to classify a child using the GMFCS?**

A. Service providers familiar with a child can complete the GMFCS in less than 5 minutes. Those unfamiliar with the child (and therefore requiring an observation session), may require 15 to 20 minutes to complete the GMFCS. Most distinctions are fairly clear and decisions about which level most closely resembles the child's current gross motor function can be made quite quickly. Sometimes (i.e., at certain ages), the distinctions between two adjacent levels are more subtle and require more careful deliberation before making a classification.

**Q. Do I need to observe the child in order to complete the GMFCS?**

A. A classification can be made based on general familiarity with a child's current gross motor abilities without necessitating an observation. Information about the child's usual performance and limitations in gross motor function in home, school and community settings can be obtained by parent/caregiver interview or by review of recent clinic notes that describe gross motor function.

**Q. How can the GMFCS information be used?**

A. The GMFCS has application for clinical practice, research, teaching, and administration (have interactive link/"hot" buttons to each of the words: clinical practice, research, teaching, administration).

In **clinical practice**, knowledge of a child's GMFCS level is very useful for communicating with parents and setting the stage for collaborative goal setting.

For example, the probability of ambulation for a child classified at level V is extremely low and very different from children in levels I, II, or III. As a result, the system is extremely useful in terms of intervention planning at the levels of impairment and activity. An emphasis in intervention for children in levels IV and V might be health promotion, prevention of secondary impairments, and use of technology and adapted equipment, whereas intervention for children in levels I, II, and III might be focused more on achievement of gross motor abilities.

In **research**, the GMFCS is useful in:

1. **sample selection** (i.e. identifying a more homogeneous subset of children with cerebral palsy with similar gross motor abilities);
2. **sample description** (thereby facilitating communication between researcher and consumers), and
3. **stratification** (to assist in ensuring that groups in experimental research studies are comparable).

In **teaching**, the GMFCS is a very useful tool to introduce students and service providers in all disciplines to the complexities of cerebral palsy relating to the extremely wide variation in gross motor abilities of children with this diagnosis.

In **administration**, the GMFCS is useful in terms of caseload management and resource allocation in health, recreation, and education settings for children with cerebral palsy.

**Q. How frequently should a child be classified using the GMFCS?**

A. A child should first be classified when referred for rehabilitation services to assist with realistic goal setting and appropriate intervention planning. Children might also be classified during interdisciplinary or special clinic visits or when a child is in an older age band. The most recent information indicates that GMFCS levels are quite stable after 2 years of age and children are not likely to change levels even following intervention. This is currently being studied in more depth.

**Q. How can I obtain a copy of the GMFCS brochure?**

A. The one-page GMFCS brochure can be downloaded at no cost from the *CanChild* website at [www.canchild.ca](http://www.canchild.ca). Distribution of the GMFCS has been made possible through a grant from the United Cerebral Palsy Research and Education Foundation in the United States.

**MEASUREMENT OF FUNCTION:**

**[FAQs relating to the GMFM-88:](#)**

**Q. What is the GMFM-88?**

A. The GMFM-88, or Gross Motor Function Measure 88 (previously known as the GMFM or Gross Motor Function Measure), is the original 88-item measure designed to evaluate change in gross motor function over time or with intervention for children with cerebral palsy. It has also been validated for use with children who have Down syndrome.

**Q. Who can use the GMFM-88?**

A. The GMFM-88 was designed for use primarily by physical therapists who are familiar with children with cerebral palsy, and the administration and scoring criteria outlined in the manual.

**Q. How can someone learn to use the GMFM-88?**

A. It is important for someone wanting to learn the GMFM-88 to read through the manual with particular emphasis on the administration and scoring guidelines. Practice with several children will help users feel comfortable with the items and administration methods. Comparing GMFM-88 scores with other therapists familiar with the measure should help point out inconsistencies that would need clarification. GMFM-88 training workshops are no longer available but a self-instructional CD ROM is available from Cambridge University Press (Ordering information available at [www.cup.org](http://www.cup.org) ; ISBN # 1-

898683 30 1). This program provides useful training tips and allows assessors to work through several examples of each GMFM-88 item.

**Q. How long does it take to learn the GMFM-88 items?**

A. The time to learn the GMFM-88 varies with the skill of the assessor, familiarity with standardized assessments and comfort and rapport with children with cerebral palsy. It takes a minimum of 3 hours to read through the manual and an additional 3 or more hours to work through the CD ROM training.

**Q. How long does it take to administer and score the GMFM-88?**

A. Administering the GMFM-88 may take approximately 45-60 minutes for someone familiar with the measure, depending on the skill of the assessor, the ability level of the child (the more they can do the more items need to be tested!), and the child's level of cooperation and understanding. This time will increase if the assessor wants to evaluate the use of ambulatory aids and/or orthotics in addition to an unaided assessment. Sometimes 2 sessions are required to complete all of the items. Item scoring is completed at the time of test administration. Calculation of dimension and total scores takes approximately 5 minutes with a calculator.

**Q. For what ages has the GMFM-88 been validated?**

A. The original validation sample included children 5 months to 16 years old. The GMFM-88 is appropriate for children or adolescents with cerebral palsy or Down syndrome whose motor skills are at or below those of a 5-year old child without any motor disability.

**Q. Has the GMFM-88 been tested with, and found valid and reliable, for adults with cerebral palsy?**

A. We are unaware of work done with adults; however the GMFM-88 has been used with adolescents. The GMFM-66 would likely be a more appropriate measure than the GMFM-88 for adults because not all items need to be assessed to get an accurate estimate of gross motor function.

**Q. Can the GMFM- 88 be used for children with diagnoses other than cerebral palsy?**

A. While the GMFM-88 was designed and validated for children with cerebral palsy, there is evidence that the GMFM-88 version of the measure is also valid for use with children with Down syndrome. (Note: the GMFM-66 is **only** valid for children with cerebral palsy, because the scaling was developed with data only from children with cerebral palsy.) Because the GMFM-88 samples motor skills that are typical of normal developmental milestones, it may be useful for children other than for those with whom it has been validated (i.e. children who have had a brain injury); however, reliability and validity should be established prior to using it with other groups of children.

**Q. Are there guidelines for administering the GMFM-88 in the home or community settings?**

A. No there are no guidelines for the home setting. Any modification to the equipment should be as close as possible to the recommended equipment and documented to ensure consistency with testing over time.

**Q. How accurate is an obtained total score using the GMFM-88?**

A. It is important to recognize that every time an assessor completes an evaluation with an individual child, the obtained total score is an estimate of the child's gross motor function. The GMFM-88 does not provide a way for a therapist to determine how accurate (or error free) the obtained score is. However accuracy is increased by minimizing variation in: (1) the assessors (i.e. training to be reliable users), (2) the child (i.e. ensuring the child is comfortable and rested) and (3) the environment (i.e. in the same room, with the same equipment).

**Q. How frequently should the GMFM-88 be administered?**

A. There are no guidelines provided about frequency of administration. Considerations include, but are not limited to:

- (1) age (more frequent evaluations in younger children),
- (2) type and intensity of intervention over a specified period of time (pre- and post-evaluations around interventions that are expected to make a difference),
- (3) estimate of the amount of time that the child will require to learn a gross motor function(s),
- (4) concurrent health status (evaluation around the time the child experiences other health concerns to establish the impact on gross motor function),
- (5) a facility's administrative requirement for an annual evaluation, and
- (6) responsiveness of the GMFM-88. Responsiveness of the GMFM-88 has been shown over a 6-month time interval and generally is more responsive to change for children under 3 years old.

**Q. How can change in GMFM-88 scores be interpreted?**

A. Because of the tremendous variation among children with cerebral palsy, the magnitude of change that is considered clinically "important" for an individual child will vary, and will depend on the judgements made by the child, parents, and/or therapist. In the original validation work with the GMFM-88, parents and therapists have identified a gain of about 5 and 7 percentage points respectively, as being a "medium" positive change. The Gross Motor Function Measure (GMFM-66 and GMFM-88) User's Manual has an appendix of average change scores for children of varying ages and GMFCS levels over six and twelve month intervals receiving intervention at children's rehabilitation centres in Ontario, Canada. For interpretation of change on the GMFM-66 see the FAQs related to the GMFM-66.

**Q. How can I obtain a copy of the GMFM-88 manual and score sheets?**

A. The manual, which contains updated information on the GMFM-88 and GMFM-66 with detailed administration and scoring guidelines and a scoring CD ROM, is published by MacKeith Press and is available for purchase from Blackwell Publishing (ordering information available from [www.blackwellpublishing.com](http://www.blackwellpublishing.com), ISBN # 1 89868329 8).

The GMFM-88 and the GMFM-66 are now combined on a single score-sheet, which can be downloaded from the *CanChild* web site at [www.canchild.ca](http://www.canchild.ca) and is also available in the Gross Motor Function Measure (GMFM-66 and GMFM-88) User's Manual.

**FAQs relating to the GMFM-66:**

**Q. What is the GMFM-66?**

A. The GMFM-66, or Gross Motor Function Measure 66, is an update of the GMFM-88 (the GMFM-66 is, in fact, the GMFM-88 minus 22 items!). It includes 66 items identified through Rasch analysis, which, together, best describe gross motor function in children with cerebral palsy of varying abilities. Like the GMFM-88, it is used to evaluate change in gross motor function over time or with intervention in children with cerebral palsy. The items are administered in the same way as with the GMFM-88 except for the scoring of the GMFM-66 where it is important to differentiate a true score of "0" (child does not initiate) from an item that is Not Tested (NT). This new measure uses a computer program (called the GMAE or Gross Motor Ability Estimator) to convert scores and plot them on an interval scale of gross motor function as opposed to the ordinal scaling of the original GMFM-88. It is valid **only** for use with children with cerebral palsy.

**Q. Who can use the GMFM-66?**

A. The GMFM-66 was designed for use primarily by physical therapists who are familiar with children with cerebral palsy, and the administration and scoring criteria outlined in the manual.

**Q. What are the benefits of using the GMFM-66?**

A. It takes less time to administer the GMFM-66 as it contains 22 fewer items than the original GMFM-88 version. It can be scored using a computer program (GMAE have interactive link/"hot" button here) that provides interval scaling of items and allows plotting of scores on an item map. Item maps (interactive link/"hot" button) provide information that should allow you to determine what skills are likely to be next in the child's development, thus assisting with goal setting. The computer programme assists in interpreting both clinically and statistically significant change over time by providing item maps and a summary of GMFM-66 scores (along with the 95% confidence intervals) over subsequent assessments. Another benefit includes the ability to get an

accurate estimate of a child's GMFM-66 score even when all items have not been administered.

**Q. How long does it take to learn the GMFM-66 items and the computer-based scoring system (GMAE) initially?**

A. The length of time to learn the items of the GMFM-66 varies with the skill of the assessor, their familiarity with standardized assessments in general, and with the GMFM-88 in particular, and their comfort and rapport with children with cerebral palsy. It takes a minimum of 3 hours to read through the manual and an additional 3 or more hours to work through the CD ROM training. Learning how to score and interpret the GMFM-66 using the GMAE will require additional training. The length of time to learn the scoring system depends on the assessor's familiarity with item maps.

**Q. How long does it take to administer, score and interpret the GMFM-66 for a child with cerebral palsy?**

A. As with the GMFM-88, the length of time to administer the GMFM-66 depends on factors such as the skill of the assessor, the range of abilities of the child and the child's level of cooperation and understanding during the assessment. Administering the GMFM-88 takes on average 45-60 minutes and this measure has 22 fewer items. We are currently documenting the administration time from therapists using the GMFM-66 in a trial with adolescents. Scoring for the GMFM-66 requires entering the item scores into a computer program and pushing a button to receive the GMFM-66 score, item maps and summary tables. Additional time is necessary to review and interpret item maps.

**Q. Do I need to administer all 66 items of the GMFM-66?**

A. Work is currently being conducted to test algorithms for item subsets in each of the five levels of the GMFCS. At this point, it is best to test all 66 items.

**Q. Are the dimension scores calculated somewhere by the GMFM-66?**

A. No. Item difficulties can be displayed by dimension on an "item map by item order" but dimension scores are not available from the GMFM-66. Items can also be displayed in terms of difficulty using the "item map by difficulty order" which provides much richer information. Technically, the GMFM-66 doesn't require all items to be tested so it is possible to focus on those items most relevant to the child negating the need for goal totals based on dimension scores. Accuracy of administering fewer items is currently being determined.

**Q. How accurate is an obtained total score using the GMFM-66?**

A. As for all measurements, each time an assessor completes an evaluation with an individual child, the obtained total score will be an estimate of the child's gross motor function. The GMFM-66, when used with the GMAE, automatically provides a 95% confidence interval (CI) around an obtained score. For example, a child might obtain a

total score of 42, with a 95% CI of 39 to 44. This means that the therapist can be 95% confident that the child's true score is somewhere between 39 and 44, and that the estimate on the day of testing was 42.

**Q. How frequently should the GMFM-66 be administered?**

A. There are no guidelines provided about frequency of administration. Considerations include, but are not limited to:

- (1) age (more frequent evaluations in younger children),
- (2) type and intensity of intervention over a specified period of time (pre- and post-evaluations around interventions that are expected to make a difference),
- (3) estimate of the amount of time that the child will require to learn a gross motor function(s),
- (4) concurrent health status (evaluation around the time the child experiences other health concerns to establish the impact on gross motor function),
- (5) a facility's administrative requirement for an annual evaluation, and
- (6) responsiveness of the GMFM-66. Overall, the responsiveness of the GMFM-66 has been shown to be similar to that of the GMFM-88 over 6 and 12 months, however the GMFM-66 is more sensitive to change at the extremes of the scale (i.e. for those children scoring very low and those scoring very high) and probably less than the GMFM-88 for those children functioning in the middle of the scale.

**Q. How can change in GMFM-66 scores be interpreted?**

A. The printout using the GMAE scoring program can be used to determine if change has occurred that is greater than measurement error. Basically, one needs to find out if the 95% confidence intervals (CI's) (see also frequently asked question "How accurate is an obtained total score using the GMFM-66?") between the first and second test occasion overlap. If they overlap, the difference in the obtained scores may be due to measurement error. If they do not overlap, the difference can be interpreted as true change. The overall magnitude of change in GMFM-66 score that is considered "clinically important" has not been determined scientifically but the therapist can use their clinical judgement to determine if the items showing improvement are clinically important for the child they are seeing.

**Q. How can I obtain a copy of the GMFM-66 manual and score sheets?**

A. The manual, which contains updated information on the GMFM-88 and GMFM-66 with detailed administration and scoring guidelines and a scoring CD ROM, is published by MacKeith Press and available for purchase from Blackwell Publishing ([www.blackwellpublishing.com](http://www.blackwellpublishing.com), ISBN # 1 89868329 8).

The GMFM-88 and the GMFM-66 are now combined on a single score-sheet, which can be downloaded from the CanChild web site at [www.canchild.ca](http://www.canchild.ca) and is also available in the Gross Motor Function Measure (GMFM-66 and GMFM-88) User's Manual.

## **FAQs relating to the GMAE:**

### **Q. What is the GMAE?**

A. The GMAE, or Gross Motor Ability Estimator, is a computer programme required to score the GMFM-66. This program is on CD ROM and is provided in the Gross Motor Measures (GMFM-66 and GMFM-88) User's manual. A simple self-teaching tutorial helps new users to become familiar with the use of the GMAE.

### **Q. How long does it take to learn the GMAE?**

A. A pilot study of 48 pediatric physical therapists, who were familiar with the GMFM-88, found that 61% of these therapists were confident in their ability to interpret the item map and summary information from the GMAE computer scoring program following one hour spent reading and working through the tutorial in the program and reading the interpretation guidelines from the manual.

### **Q. How long does it take to score the GMFM-66 using the GMAE?**

A. Scoring for the GMFM-66 requires entering the item scores into the GMAE user-friendly computer programme and pushing a button and takes approximately 10 minutes. You will get the GMFM-66 score with 95% confidence intervals, item maps and summary tables.

### **Q. Can I use the GMAE to get a GMFM-66 score if I have done a GMFM-88?**

A. GMFM-88 item scores can be entered into the GMAE program. Provided that all 88 items are assessed and entered, the GMFM-88 dimension and total scores as well as the GMFM-66 score can be computed by the GMAE.

### **Q. Can you put the GMAE on a network?**

A. Yes, this can be done within a centre or institution. However the GMAE is copyright and should not be posted in a public place where it can be downloaded and copied.

## **FAQs relating to the differences between the GMFM-88 and the GMFM-66:**

### **Q. What are the differences between the GMFM-88 and the GMFM-66?**

A. The GMFM-88 is the original version of the Gross Motor Function Measure. It has 88 items that are grouped (for ease of clinical administration) into five dimensions. Scoring is done by calculating a percent score for each of the dimensions and an overall score averaging the five dimension scores. It has been traditionally assumed that a change score of 'X' units (%) over time had the same meaning across the whole GMFM-88.

The GMFM-66 uses 66 of the original 88 items, assessed and scored in the same way as the GMFM-88, with the exception that on the GMFM-66, one has the option of scoring “not tested”. Apart from the fact of being somewhat shorter, the major difference between the two measures concerns the ‘scaling’ of the GMFM-66. Using a method of scaling called Rasch (‘item response theory’) analysis, it has become possible to describe the order of difficulty of all 66 GMFM items; to create an ‘item map’ that displays the relative level of difficulty of each step of each item; and to provide an ‘interval-level’ measure. This means that a change of ‘X’ points on the GMFM-66 has the same meaning anywhere on the scale – something that is not true with the GMFM-88. From a clinical perspective it is possible to identify relatively easier and more difficult ‘next steps’ for any child whose gross motor function has been assessed with the GMFM-66.

## **PREDICTION OF GROSS MOTOR FUNCTION:**

### **[FAQs relating to the motor growth curves:](#)**

#### **Q. What are the motor growth curves, and what information do they provide?**

A. The curves can be used to describe patterns of gross motor function for children with cerebral palsy over time, and to estimate a child’s future motor capabilities (similar to height and weight growth charts). The motor growth curves present a plot of GMFM-66 scores (on the vertical axis) by age (across the horizontal axis) for each of the five GMFCS levels. They were developed from data obtained from a large, population-based sample of children with cerebral palsy (Rosenbaum et al., 2002).

Rosenbaum, P., Walter, S., Hanna, S., Palisano, R., Russell, D., Raina, P., Wood, E., Bartlett, D.J., & Galuppi, B.E. (2002) Prognosis for Gross Motor Function in Cerebral Palsy: Creation of motor development curves. Journal of the American Medical Association, 288:1357-1363.

#### **Q. How can I obtain a copy of the motor growth curves?**

A. The motor growth curves can be downloaded from the *CanChild* web site at [www.canchild.ca](http://www.canchild.ca) either individually for a specific GMFCS level or for all 5 curves together in one document.

#### **Q. Who can use the motor growth curves?**

A. Anyone who can administer and score the GMFM-66 can plot an individual child’s score.

#### **Q. How can the motor growth curves be used?**

A. On first assessment using the GMFM-66, a child’s relative ranking compared to children in the population-based sample can be determined. With repeated scoring

over time, it is possible to determine whether a child is functioning as well as expected, better than expected or more poorly than expected.

**Q. How frequently should a child's GMFM-66 score be plotted?**

A. There is no recommended frequency however plotting scores at yearly intervals would be appropriate.

**Q. What are the implications for services when the GMFM-66 scores reach a plateau?**

A. It is important to be aware that while children with cerebral palsy may reach a plateau in the abilities specifically measured by the GMFM-66, decisions regarding service provision should not be based on their GMFM-66 scores alone. Gross motor function in children with cerebral palsy may continue to change over time as they use these abilities in the context of daily life. It is also important to keep in mind that children with cerebral palsy continue to develop important *quality* of movement aspects which may, in turn, improve overall gross motor performance. The goals of service provision may shift away from a focus on the development of motor skills towards such goals as the prevention of secondary impairments. As well, physical goals may be replaced with communication or other goals. Decisions regarding service provision must take all of these factors into account.

**MEASUREMENT OF GROSS MOTOR PERFORMANCE:**

**FAQs relating specifically to the GMPM:**

**Q. What is the GMPM?**

A. The GMPM, or Gross Motor Performance Measure, is a measure of the quality of movement (i.e., alignment, weight shift, coordination, dissociated movements and stability) and is used to evaluate change in the quality of movement over time or with intervention of children with cerebral palsy to 12 years of age. It is used in conjunction with items from the GMFM-88.

**Q. What is the difference between the GMFM and the GMPM?**

A. While the GMFM is a measure of gross motor **function**, the GMPM is a measure of gross motor **performance** or **quality**.

- The GMFM looks at whether a child can do a described gross motor activity (a GMFM 'item'), and how much of that activity they can do. Each GMFM 'item' can be scored from 0 ('does not initiate') to 3 ('completes the activity' [as described in the manual]). When scoring the GMFM, no consideration is given to how well the activity is done.
- The GMPM is designed to explore the qualitative aspects of 'performance'. How well does a child do the GMFM activities they are able to do? Here the focus is

on a number of specifically identified attributes of 'quality' that have been associated with each GMFM item. In mid-2003, the GMPM is undergoing further development to expand the measure and make it more easily accessible for clinical and research applications.

**Q. Who can use the GMPM?**

A. The test developers identify the GMPM as appropriate for use by pediatric physical and occupational therapists who are experienced in working with children with neuromotor impairments and familiar with the administration guidelines outlined in the manual.

**Q. Has there been any further work on the GMPM since its initial development?**

A. As of the summer of 2003, there is work being done by Virginia Wright (Bloorview MacMillan Children's Centre) to build on the feedback received by users of the GMPM. Consensus methods are being used to expand the number of GMFM items tested in the Stand and Walk Dimensions to look at quality and to do further reliability and validity testing of the expanded GMPM.

**Q. How can I obtain a copy of the original GMPM manual?**

A. For information regarding how to obtain a copy of the original GMPM manual, please contact Dr. William Boyce, Social Program Evaluation Group, McArthur Hall, Queen's University, Kingston Ontario, K7L 3N6; by fax at (613) 533-2556, or by email at [spegmail@educ.queensu.ca](mailto:spegmail@educ.queensu.ca). Information about the expanded version of the GMPM can be obtained from Virginia Wright by email at [vwright@bloorview.ca](mailto:vwright@bloorview.ca).

**ALL GROSS MOTOR MEASURES:**

**FAQs relating to the links between measures:**

**Q. In what situations would I use the GMFM-88 instead of the GMFM-66?**

A:

- The GMFM-88 can be used for children with cerebral palsy or Down syndrome. The GMFM-66 is valid **only** for use with children with cerebral palsy.
- The GMFM-88 should be used when one is interested in determining dimension scores; the GMFM-66 does not calculate dimension scores.
- The GMFM-88 has many more items that describe and assess gross motor function of very young children or children whose highest motor abilities are in the dimension lying and rolling. For these children, the GMFM-88 will provide more descriptive information about motor status.

- The GMFM-88 should be used if one is interested in evaluating children with ambulatory aids and/or orthoses. The GMFM-66 has been developed using data from children who did *not* use aids and orthoses.
- To score the GMFM-66 you need the GMAE scoring program. If you don't have access to the scoring program or a computer you would need to use the GMFM-88. It would still be wise to score the GMFM-88 with the "Not tested" category so that the information could be entered into the GMAE program at a later time.

**Q. In what situations would I use the GMFM-66 instead of the GMFM-88?**

A.

- The GMFM-66 is valid **only** for use with children with cerebral palsy. The GMFM-88 can be used for children with cerebral palsy or Down syndrome.
- In situations where assessment length is a factor, the GMFM-66 takes less time to administer than the GMFM-88 and does not require all items to be assessed to get an accurate estimate of a child's score.
- To chart within-child change over time or to compare patterns of change between children, the GMFM-66 will provide a more meaningful assessment of change because the items are ordered by level of difficulty. Furthermore, change over and above measurement error is easily determined by examining the extent of overlap of the 95% confidence intervals produced by the GMAE.

**Q. Can you use the GMFCS to interpret the outcome of the GMFM?**

A. By plotting GMFM-66 scores by GMFCS level, estimations regarding future motor capabilities for children with cerebral palsy (similar to height and weight growth charts) can be made. Because GMFCS level and age are the major determining factors of gross motor function in children with cerebral palsy, knowledge of these two factors can enable one to plot a child's GMFM-66 score, and to see how close the measured GMFM-66 score is to the 'expected' (average) motor growth curve value for other children of the same GMFCS level. It is important to remember that the 'line of best fit' on the motor growth curves is not the actual 'true' value of every child in that GMFCS level because there is variation in patterns of gross motor function among children within each GMFCS level.

However, it must of course be recognized that there are many potential sources of error. These include how well the GMFM assessment was done by the assessor; how well the child performed relative to their typical ability; and whether the GMFCS level assigned is accurate (something that is harder with children under age 2 years).

**Q. What's the more valid measure – the GMFM-66 or the goal areas of the GMFM-88?**

A. The GMFM-66 is the more valid measure. The GMFM-88 goal areas arising from the dimension scores are no longer available when using the GMFM-66. The item map produced by the GMAE using the GMFM-66 scores displays the items in order of difficulty, making it possible to identify relatively easier and more difficult "next steps".

**Q. How do the motor growth measures link with the International Classification of Functioning, Disability and Health?**

A. Information from the GMFM-88 or GMFM-66 and the motor growth curves assist with assessment and intervention at the ICF dimension "activity/activity limitations" (execution of a task or action by an individual). The GMFM-88 or GMFM-66 do not provide information at the dimension of 'impairment' in body structure and function, nor does it describe how a person uses their gross motor function for participation in daily life.