



Developing a revised definition of the Bobath concept

Julie Vaughan-Graham¹ | Cheryl Cott¹ | Ann Holland² | Marc Michielsen³ | Alba Magri⁴ | Mitsuo Suzuki⁵ | Dina Brooks¹

¹Department of Physical Therapy, University of Toronto, Toronto, Ontario, Canada

²Neurorehabilitation and Therapy Services, The National Hospital for Neurology and Neurosurgery, London, UK

³Physiotherapy Department, Jessa Hospital, Hasselt, Belgium

⁴Physiotherapy Clinic, Studio Erre, Brescia, Italy

⁵Rokujizo General Hospital, Kyoto, Japan

Correspondence

Julie Vaughan-Graham, Department of Physical Therapy, University of Toronto, 160-500 University Avenue, Toronto, ON M5G 1V7, Canada.

Email: julie.vaughan.graham@utoronto.ca

Abstract

Objective: This study was developed as a consensus-building exercise within the International Bobath Instructors Training Association (IBITA) to develop a revised definition of the Bobath concept.

Methods: A three-phase design utilizing (a) focus groups, (b) survey methods, and, (c) real-time Delphi. This paper details Phase 1 and 2.

Results: Forty IBITA members participated in five focus groups. Eight broad themes were developed from the focus groups from which the survey statements were developed. There was a high level of agreement on all nine survey statements identifying overarching constructs and on 12 of the 13 statements identifying unique aspects of Bobath clinical practice. Lower scores were attributed to lack of understanding of the term humanistic, Bobath clinical practice addressing multiple domains such as impairments, activities, and participation and limited agreement on the description of the term “placing.”

Conclusion: Focus groups and a web-based survey were successful in soliciting the opinions of IBITA members on themes and statements of importance for the development of a revised Bobath definition. The results of Phase 1 and 2 will inform Phase 3, a real-time Delphi, to gain consensus within IBITA on statements on which a revised Bobath definition is to be based.

KEYWORDS

Bobath concept, focus groups: survey methods, neurorehabilitation

1 | INTRODUCTION

The World Health Organization estimates stroke is one of the leading causes of long-term morbidity and overall disease burden (Kim & Johnston, 2011), with poor functional outcomes being associated with increased socio-economic burden (Lekander et al., 2017). Stroke mortality is decreasing with the number of stroke survivors living with disabilities expected to rise significantly in the next two decades (Krueger et al., 2015). Thus, there is an increasing need for effective neurorehabilitation interventions.

The Bobath concept is one of the most widely used neurorehabilitation approach worldwide (Kollen et al., 2009; Vaughan-Graham, Cott, & Wright, 2015a). Conceived in the 1950's by Berta and Karel Bobath, the Bobath concept revolutionized

neurorehabilitation through its focus on motor recovery rather than compensation (Vaughan-Graham et al., 2015a). Despite widespread international use of the Bobath concept, there are misunderstandings on how the concept is defined and operationalized leading to challenges in interpreting the research evidence as to its effectiveness (Vaughan-Graham et al., 2015a; Vaughan-Graham, Cott, & Wright, 2015b). The International Bobath Instructors Training Association (IBITA), formed in 1984, provides a forum for defining the continued interaction and education of its present instructors, the training of future instructors, and the formulation of the rules and regulations with respect to the teaching of the Bobath concept worldwide. IBITA currently unites 255 Bobath instructors in 29 countries, and in 2017, it reported 214 IBITA basic courses (15-day certification course) and 47 IBITA Advanced courses (5 day course) taught worldwide (IBITA,

2017). The IBITA Education Committee (EdC) comprises four elected IBITA members; the term of office is 3 years, and each member may serve no more than two consecutive terms. One of the purposes of the IBITA EdC is to develop and update models for clinical practice and the underlying theory.

This study was developed as a consensus-building exercise in collaboration with the IBITA EdC to develop and revise the definition of the Bobath concept identifying the unique characteristics of Bobath clinical practice such that the Bobath concept can be appropriately researched and consistently taught worldwide. The study objectives included the following:

1. To elicit a range of perspectives from IBITA members on contemporary Bobath clinical practice and the aspects requiring consideration in a revised definition,
2. To solicit the opinions of the IBITA membership on the range of perspectives,
3. To gain consensus on statements to form the basis of a revised definition of the Bobath concept identifying its unique contribution to neurorehabilitation.

The original Bobath concept was defined as follows: "A concept of treatment based on the inhibition of abnormal reflex activity and the relearning through the facilitation of more normal movement" (Bobath, 1970). In 1995, the definition was revised to: "A problem-solving approach to the assessment and treatment of individuals with disturbances of function, movement and postural control due to a lesion of the central nervous system" (VGraham, Eustace, Brock, Swain, & Irwin-Carruthers, 2009).

Since 2006, several peer-review publications have begun to detail the theoretical and clinical developments such that the concept may be placed within the context of contemporary neurorehabilitation (Levin & Panturin, 2011; Raine, 2006, 2007; Vaughan-Graham et al., 2015a; Vaughan-Graham & Cott, 2016, 2017; Vaughan-Graham, Patterson, Zabjek, & Cott, 2017; VGraham et al., 2009). A recent scoping review described the Bobath concept as an inclusive, individualized, problem-solving, living concept based on a systems approach to motor control, with particular emphasis on movement analysis and motor recovery from the perspective of the integration of postural control, task performance, and contribution of sensory inputs (Vaughan-Graham et al., 2015a). These publications provide a starting point for revising the definition of the Bobath concept, outlining the assumptions and principles of contemporary Bobath clinical practice and the contemporary neuroscience and rehabilitation science underpinning the concept.

2 | METHODS

2.1 | Study design

The study utilized a three phase design as follows: (a) Phase 1: focus groups, (b) Phase 2: survey methods (informed by Phase One), and (c) Phase 3: real-time Delphi using an online polling tool. This paper details Phase 1 and 2.

Ethical approval was granted for this study from the Health Sciences Research Ethics Board, University of Toronto. Ethics approval was also granted by the Yong In University Institutional Review Board for the Phase 1 focus groups undertaken in South Korea.

2.2 | Researcher reflexivity

The first author (JVG) is a physiotherapist with over 30 years of experience in neurorehabilitation and a post-doctoral fellow since 2016 with the Department of Physical Therapy, University of Toronto. JVG has been a member of IBITA since 2001 and is therefore considered an insider. However, an insider ensured a shared understanding of the structure of IBITA, the topic under investigation, and assured the IBITA membership that the transcripts and qualitative comments would be analysed with tacit understanding. The senior author (DB) is a physiotherapist and full professor with the Department of Physical Therapy, University of Toronto. DB is not a neurological physiotherapist nor a member of IBITA. JVG and DB were responsible for the study design, data analysis, and manuscript preparation; however neither were directly involved in the focus group data collection. DB reviewed all transcripts, coding documents and study memos to ensure trustworthiness of the data. The second author (CC) contributed to data analysis and manuscript preparation. The remaining authors were members of the IBITA EdC and assisted with the focus group data collection and manuscript preparation.

2.3 | Phase 1: Focus groups

The focus group method allowed for questioning of a group of participants in an informal setting enabling a range of perspectives to develop through a collective conversation (*The Oxford Handbook of Qualitative Research*, 2014; pp. 318–319) (Carpenter & Suto, 2008; p. 85). Focus groups were used to gather a range of perspectives from a group of IBITA instructors with respect to the Bobath concept building upon recent publications (Vaughan-Graham et al., 2015a) (Vaughan-Graham & Cott, 2016).

2.4 | Sampling and recruitment

Sixty-three IBITA instructors registered for the 2016 IBITA Annual General Meeting (AGM) in Bundang, South Korea and were invited to take part in the study. Recruitment for Phase 1, the focus groups, was via email invitation from the Chair of the Executive Committee (EC) requesting voluntary participation. Each focus group comprised of IBITA members from different countries and with varying instructor status. Focus group participants provided written informed consent.

2.5 | Data collection and analysis

Five focus groups, each comprising eight participants, each lasting 1–1.5 hr, were undertaken concurrently due to time constraints of the IBITA meeting and participant availability. A moderator from the IBITA EdC or EC was assigned to each focus group. The moderator, using a script, reiterated the nature and purpose of the focus groups and that all focus group discussion was to be private and confidential.

The moderator used a question guide presenting questions such as, “what do you think are the essential aspects of the Bobath concept that should be included in a revised definition?” and “what do you think makes Bobath clinical practice unique?” (Appendix 1). All focus group discussions were audio-recorded.

The focus group audio-recordings were uploaded to a professional transcription service and were transcribed verbatim immediately following data collection. Each focus group moderator received a copy of their focus group transcript to check for accuracy and completeness. The focus group transcripts were imported into the NVivo qualitative software program to facilitate the coding and analytic process undertaken by the first author (JVG). Coding was a progressive, iterative process beginning with labelling segments of the data (Thorne, 2008; pp. 142–147), then through making comparisons and writing memos the data was reassembled into categories (Thorne, 2008; pp. 149–151). The development of a codebook and memo writing demonstrating a decision trail were used by the first author to ensure the trustworthiness of the data (Carpenter & Suto, 2008; Johnson & Waterfield, 2004; p.150).

Initial codes such as “improve definition specificity,” “living concept” and “unique characteristics” were grouped under the category “update definition,” whereas other codes such as “24 hour approach,” “cognitive and perceptual,” and “real life issues” were grouped under the category “Individual”. The focus group data was purposely not taken to successive levels of abstraction in order to maintain the range of perspectives raised in the focus groups such that the survey statements captured the breadth of the focus group data.

2.6 | Phase 2: Web-based survey

The survey was developed based on the data collected from the Phase 1 focus groups and any additional relevant publications. The survey was piloted with a group of seven physiotherapists practicing in the field of neurorehabilitation with post-graduate clinical education at basic and advanced Bobath course levels. Feedback on the functionality of the survey tool, the readability, and completeness of the survey was sought and guided revisions of the survey. An online survey tool “Qualtrics” allowed for the international group to be surveyed relatively inexpensively, quickly, but broadly over a wide geographical area (Rea & Parker, 2005; p.11–13).

2.7 | Sampling and recruitment

All members of IBITA were eligible and invited to participate in Phase 2. Recruitment was via email invitation from the Chair of the EC to all IBITA members requesting their voluntary participation. A weblink, included in the email invitation, directed the participant to page one of the survey. The Phase 2 study information and invitation letter was also posted on the members side of the IBITA website.

2.8 | Data collection and analysis

Page one of the survey provided study information and informed consent. Demographic information was collected at the end of the survey. The survey was open for 6 weeks during March and April 2017.

Part I of the web-based survey comprising nine statements identified constructs that were important to the overall perspective of the Bobath concept. Participants were asked to rate how important it was for the constructs to be included in a revised Bobath definition from “not at all important” to “extremely important.”

Part II of the web-based survey comprising 13 statements aimed to identify the unique contribution of the Bobath concept to the rehabilitation of movement. Participants were asked to rate their level of agreement with each statement from “Strongly disagree” to “Strongly agree.” The scales offered two levels to distinguish between strength of view for both importance/agreement and not important/disagreement, with a midpoint for a neutral opinion. A comment box was provided at the end of each statement for suggestions.

All survey responses were not personally identifiable. Participants were not able to access other participants responses. Reminders were sent from the Chair of the IBTA EC 1 week following the initial invitation and at 1 week and 2 days prior to closure of the survey (Dillman, 2000).

Descriptive statistics were performed (mean, standard deviation) and Likert frequency scores (%) were reported for each survey item.

3 | RESULTS

3.1 | Phase one focus groups

Forty IBITA instructors participated in Phase 1 (See Table 1: Demographics). Approximately half were basic course Instructors ($n = 24$) with less than 10 years experience ($n = 20$). Most were from Asia ($n = 27$) with English as a second language (ESL; $n = 36$). Eight broad themes developed from the focus group data. The themes and accompanying sub-themes were as follows (refer to Table 2 for supporting data):

1. The need to update and identify the unique characteristics of the Bobath concept;
2. The individualized nature of the Bobath concept encompassing the whole body and a holistic 24-hr approach;
3. Movement analysis of task performance with respect to impairment, activity, and participation;
4. Clinical reasoning as an individualized, reflective, problem-solving process revolving around movement hypotheses, and a movement diagnosis;
5. Intervention as an active learning process, the importance of the inter-relationship of body segments, the development of patterns of movement, and the use of sensory information to rebuild body schema;
6. Integration of postural control and selective movement with respect to stability and mobility, orientation, efficiency, and the quality of the movement;
7. Skilled Facilitation enables a movement experience through the use of verbal, manual, and environmental cues for a specifically selected task as well as providing the therapist with a unique source of information on the movement capabilities of the individual; and
8. Knowledge of the therapist including theoretical and professional practice knowledge.

TABLE 1 Phase 1—Focus groups participant demographics

IBITA instructor category	
Instructor-candidate	5
Basic course instructor	24
Advanced course instructor	8
Senior instructor	2
Retired	1
IBITA member (number of years)	
1–5	10
6–10	10
11–15	4
16–20	6
21–30	5
>30	5
Country of residence by world region	
Asia	27
Europe	11
North America	1
Australia and Oceania	1
Highest Academic Degree	
DPT/PhD	2
MSc/MA	9
BScPT	21
Grad. Dip. Phys.	8
English as a second language	
Yes	36
No	4

Note. BScPT: Bachelor of Science in Physiotherapy; DPT: Doctorate of Physiotherapy; Grad.Dip.Phys.: Graduate with Diploma of Physiotherapy; IBITA: International Bobath Instructors Training Association; MA: Master of Arts; MSc: Master of Science; PhD: Doctor of Philosophy.

The survey statements were developed from these themes and sub-themes (refer to Table 3). The survey was developed in two parts with part I comprising statements related to overarching constructs and part II identifying key components of Bobath clinical practice.

3.2 | Phase two web-based survey

The web-based survey was open for a period of 6 weeks. One hundred and fifteen out of 245 IBITA members (47%) responded to the invitation to participate (see Table 4: Survey Participant Demographics). IBITA members from all membership and instructor categories participated from a total of 26 countries. Eighty-four respondents (76%) identified ESL.

In Part I of the survey, in which statements described the overarching constructs relevant to a revised definition of the Bobath concept, over 80% of respondents scored 4 or 5, very/extremely important, to all statements. For survey Item 2 describing the Bobath concept as based within a humanistic approach to rehabilitation one respondent scored 1, not at all important, and 4 respondents scored 2, slightly important. There were four comments related to not understanding the term “humanistic,” which may have contributed to these lower scores by five respondents. Survey Items 7, 8, and 9 received lower scores, and on review of the comments pertaining to these

survey items the respondents identified that Bobath therapists do not address only one domain such as impairment, activity or participation but that all of these aspects of intervention are being simultaneously addressed however one aspect maybe emphasized dependent on the individual's goals.

In Part II of the survey, in which statements aimed to identify the unique aspects of Bobath clinical practice, over 90% of respondents scored 4 or 5, somewhat agree/strongly agree, to all survey items except Item 22. There was strong agreement for survey Items 12 and 15 which identified the interactive and interdependence of postural control and selective movement and how this forms the basis of movement analysis of task performance in Bobath clinical practice. Respondents also strongly agreed with the statement describing “facilitation” as the specific manipulation of sensory information and a Bobath clinical skill (survey Item 19). The statement that received the least agreement and most varied responses, survey Item 22, was with respect to the concept of “placing’, the ability to maintain body segment alignment in response to facilitation. On review of the comments related to this statement, respondents agreed that “placing” was an important concept within Bobath clinical practice but that it is a difficult concept to describe and possibly lends itself to a video explanation rather than limited to a statement.

4 | DISCUSSION

This study is the first of its kind within IBITA to use an empirical approach to revise the definition of the Bobath concept. Forty of the 63 IBITA instructors who attended the IBITA AGM in South Korea participated in the Phase 1 focus groups, and a satisfactory response rate of 47% of the IBITA membership responded to the web-based survey. IBITA members for whom English was a second language were the majority of respondents in Phase 1 and 2, indicating that the results were not dominated by members for whom English was their first language. Phase 3 of this study will utilize a real-time Delphi design at an IBITA AGM where onsite technological support will be provided to ensure optimal engagement of the IBITA membership.

The focus group participants confirmed the need to update the current definition of the Bobath concept, to improve its specificity by identifying the unique characteristics of the concept. The eight broad themes and accompanying sub-themes identified from the focus group data were consistent with recent Bobath literature (Vaughan-Graham & Cott, 2016; Vaughan-Graham & Cott, 2017; Vaughan-Graham et al., 2017). In particular, the individualized nature of the Bobath concept addressing the whole person within their changing daily context such that intervention goes beyond one on one therapy (Vaughan-Graham et al., 2017). The IBITA instructors identified the role of the trunk in movement control, not just a body segment, limb or task but also the level of cognition. It is therefore an inclusive treatment concept and not dependent upon the person's functional or cognitive level (Vaughan-Graham et al., 2015a). Movement analysis, a key theme, focuses upon task performance, the how or why is the person moving as they do, differentiating the Bobath concept from task practice, which is focused on task completion rather than the movement strategies used (Vaughan-Graham et al., 2015a).

TABLE 2 Themes, subthemes, and supporting data

Theme	Subtheme	Quotation
Update definition	Improve definition specificity	"Our skill of taking the knowledge of postural control to create a change in orientation, a change in alignment, and therefore a change in activation for a change in task, for a change in participation" "It's not showing clearly what we are really doing" (P2-FG2)
	Identify unique characteristics	"Not just asking them what they can do and observing, but the response to what you feel through your hands as you are feeling them move or facilitating a movement" (P4-FG3) "What is unique to the Bobath concept ... efficiency and quality, postural control, selective movement" (P3-FG4)
	A living concept	"It's saying that it's a changing concept. It's dynamic. It's evolving" (P5-FG2) "That's why they said it was a living concept that would change as the more knowledge was known" (P1-FG1)
Individualized	24-hr approach	"I know of no other concept that does this, that we have not only this treatment situation, one to one with the patient, but thinking also, how we can change environment, how we manage the life of the patient and all of what is necessary" (P7-FG4)
	Holistic	"We look at the patient as a whole" (P3-FG2) "The cognitive potential of the patient is part of the treatment" (P5-FG1) "Perception, cognition, sensory integration of perception and cognition is part of what we do" (P1-FG5)
	Role of the trunk	"I think we come back to the postural activity, we look at the two sides of the body, and we do, definitely, consider how this will impact on a range of functional activities" (P6-FG3) "We address more than other concepts, which is the trunk" (P3-FG3)
Movement analysis	Activity and participation	"The functional improvement that we get in our patients comes from our ability to construct an environment and a task with respect to an activity for participation" (P7-FG2) "The choice, whether you are starting at an activity-participation level or at a function-structure level is dependent upon the individual" (P4-FG4)
	Impairment	"Addressing the impairment in treatment that changes their postural control, produces more selectivity of movement, which can then be taken into function" (P6-FG1)
	Task performance—Task practice	"The skill is the analysis of the movement components needed for that task" (P2-FG2) "The patient is moving in a particular way, and we are questioning why is (he) moving in this way, and do I have inputs, or can I give inputs, do I have entrances, to change this 'why' into a higher potential, into a better quality of movement" (P1-FG4) "If we don't take the 'part' to the 'whole', we are not completing the treatment or fulfilling the remit of the Bobath concept" (P8-FG2)
	Compensation	"My interpretation of the Bobath concept is to work for the postural activity that will allow the patient to minimize the compensatory strategy, or to use a strategy that's going to be less detrimental in the future" (P1-FG3)
Clinical reasoning	Problem solving	"A problem-solving approach goes with development of a working hypothesis, identification of potential, and lots of the other areas individualized and inclusive that we have in the model of Bobath clinical practice" (P4-FG2) "The handling, the use of the environment, all of the treatment is enabling the patient to problem solve their movement deficits and difficulties because it's their activity that is going to make the change" (P5-FG3) "We are problem-solving movement control dysfunction" (P1-FG2)
	Movement diagnosis	"We're treating movement control issues, movement control problems" (P2-FG2) "We are not treating the motor outcome, we are treating the problems which cause the motor outcome, and they can relate to all the systems we have" (P1-FG4)
	Reflection	"We're describing the clinical reasoning in action, in the situation, but there is also clinical reasoning away from the situation for the next time. In generating the hypotheses in terms of where the treatment plan is going, it's not just at the time. It's thinking and looking the next day at the carryover and bringing them together" (P4-FG1)
Intervention	Sensory information	"How we start and wait for the integration of the sensory afferent input so that the patient then can drive and set up the motor planning and the motor pathway" (P6-FG4) "We prepare the sensory information so that the patient is able to create a different outcome" (P2-FG4)
	Patterns of movement	"The timing and the sequence of the initiation and the whole pattern of movement is critical" (P8-FG1) "We're looking at sensory motor control of postural activity and selective movement" (P2-FG3)
	Interrelationship of body segments/body schema Potential for change	"We emphasize the interrelationship between body parts" (P6-FG2) "We target the body schema through the sensory information" (P5-FG5) "You're looking to see, what's the next step? Where can we get to now? If I can make this change" (P3-FG3)
Integration of postural control and selective movement	Postural control	"Any individual movement, any functional movement, we look at the postural requirements needed for that rather than just the focus on, can you perform that movement" (P6-FG3)

(Continues)

TABLE 2 (Continued)

Theme	Subtheme	Quotation
	Selective movement	"The focus we place on not just allowing someone to compensate for a loss of postural control, but to actually create the activity that will support the movement or the function" (P8-FG3)
	Quality of movement	"When we put our hands on, we are providing an enriched forum of sensory-afferent information that the patient cannot acquire by themselves, in order for them to then initiate more selective movement through better postural control" (P4-FG2) "Addressing the impairment in treatment can change their postural control, which produces more selectivity of movement, and is then taken into function" (P5-FG5) "We use specific handling to introduce patients to a new sensation of movement really precisely, and specifically, in order to bring about movement with quality" (P7-FG3)
Skilled facilitation	Facilitation	"Facilitation is more than hands on. It's also environment, it's verbal, it's task-specific. The way in which facilitation is used is dependent on your patient" (P8-FG4)
	Handling	"It is a skill-based therapy, that is it's not a list of techniques" (P4-FG3)
	Environment	"There is a difference when your two hands go on and do the same thing to how your two hands go on and do something very differently within the task" (P3-FG1) "Our use or creation of a flexible, variable environment. Use of rolls, balls, corners, floor, height, gravity, sensory stimulation, the bathroom, the kitchen, the toilet, the bed, the carer ..." (P2-FG2)
	Movement experience	"The afferent information is used to create the orientation and stability, that is part of postural activity, that then allows you to facilitate a movement that the patient cannot do alone, but they can do some elements of" (P1-FG3)
	Patient–therapist interaction	"I'm putting my hands on a client to facilitate something, I feel what is the response and then I have to change my hands according to the response of the patient, I am feeling what the client is doing" (P1-FG2)
Knowledge	Therapist theoretical knowledge	The theoretical underpinnings being motor control, motor learning, neural plasticity and movement analysis" (P1-FG1)
	Therapist professional practice knowledge	"Our knowledge base and the development of our knowledge base, as the concept has developed ..." (P7-FG2) "Our understanding of human movement" (P5-FG3)

The Bobath therapist may address task performance either from an impairment level or at an activity/participation level, dependent upon the individual and the context in which the intervention is being delivered (Vaughan-Graham et al., 2017). The focus on task performance questions the role of compensatory movement strategies within neurorehabilitation and how compensation maybe minimized to optimize functional recovery (Jones, 2017; Vaughan-Graham & Cott, 2016). The integration of postural control and selective movement, also a key theme, intersects with movement analysis with respect to task performance as well as forming the foundation of the Bobath therapist's clinical reasoning process (Vaughan-Graham et al., 2017; Vaughan-Graham & Cott, 2017). The rehabilitation of movement for the Bobath therapist revolves around the development of a movement diagnosis, not a medical diagnosis, guiding the intervention by specifying the sensory information, through the clinical skill of facilitation, to in turn influence the sensory consequences of motor behaviour (Levin & Panturin, 2011; Vaughan-Graham et al., 2017). From the focus group data, it became clear that survey statements were required to identify overarching constructs to place the Bobath concept within the context of contemporary neurorehabilitation as well as survey statements identifying the unique characteristics of Bobath clinical practice.

Nine statements were developed from the focus group data describing overarching constructs for which six statements had a high level of agreement. Statements 7 and 8 may have received lower scores as "activity limitations" and "impairments" were identified in separate statements for the purposes of clarity. However, the respondents identified that they address both constructs simultaneously but either construct may be emphasized dependent upon the individual's goals thus, highlighting and confirming the individualized nature of

the Bobath clinical reasoning approach (Vaughan-Graham & Cott, 2017). Survey Statement 2 referring to a humanistic approach to rehabilitation also received a lower score, which upon reflection maybe a difficult term to comprehend for those respondents for whom English was a second language. The term humanistic was used to aim to describe the breadth of the Bobath concept from the perspective of how different aspects of the person's life may be utilized to better understand their movement problems as well as providing context to their goals, and has been used similarly in a previous publication on the Bobath concept (Vaughan-Graham et al., 2017). However, further discussion and explanation is likely warranted with regard to the term humanistic if it were to be included in a revised definition.

Thirteen statements aimed to identify the unique aspects of Bobath clinical practice with all statements receiving a high level of agreement except for Statement 22, which described the concept of "placing." Placing has been previously identified as an important concept within Bobath clinical practice (Levin & Panturin, 2011); however, Levin & Panturin provide a general description referring to both the limbs and trunk, as an active movement, but not specifically in terms of a response to facilitation. Survey statement 22 aimed to address the concept of placing as a Bobath clinical skill using distal facilitation to gain active alignment of a limb or the trunk, for example, the ability to maintain a cooperative posture of a limb or the trunk, which has minimal to no active voluntary movement. Both the Levin & Panturin statement and the statement included in this survey refer to placing as an automatic response. Although respondents identified that placing was a unique clinical Bobath skill their comments suggest that it is a concept that is very difficult to describe in words and maybe more conducive to video illustration to provide a clearer understanding. Over 80% of respondents scored "strongly agree" to survey statements 12, 15, and

TABLE 3 Survey results

		Likert score responses (%)					Total count	Mean/ SD
		Not at all important 1	Slightly important 2	Moderately important 3	Very important 4	Extremely important 5		
Overarching constructs: The Bobath concept								
1.	The Bobath concept provides an overall conceptual framework with respect to the rehabilitation of movement	0 (0)	2 (2)	10 (9)	35 (30)	68 (59)	115	4.5/0.5
2.	The Bobath concept is based within a humanistic approach to rehabilitation	1 (1)	4 (4)	9 (8)	42 (37)	57 (50)	113	4.3/0.7
3.	The Bobath concept is informed by contemporary knowledge of movement and neuroscience	0 (0)	0 (0)	4 (4)	20 (18)	90 (79)	114	4.8/0.3
4.	Clinical practice of the Bobath concept is inclusive of persons with cognitive and perceptual deficits.	0 (0)	2 (2)	9 (8)	38 (33)	65 (57)	114	4.5/0.5
5.	Interventions based on the Bobath concept are individualized	0 (0)	0 (0)	1 (1)	20 (18)	92 (81)	113	4.8/0.2
6.	Bobath interventions are based upon the identification of a movement diagnosis and hypothesis development	0 (0)	0 (0)	1 (1)	26 (23)	87 (76)	114	4.8/0.3
7.	Bobath interventions address activity limitations	1 (1)	2 (2)	12 (11)	41 (37)	56 (50)	112	4.3/0.7
8.	Bobath interventions address impairments.	0 (0)	2 (2)	16 (14)	47 (42)	48 (42)	113	4.3/0.8
9.	Bobath interventions are delivered within the context of the individual's environment and participation goals	2 (2)	1 (1)	4 (4)	22 (19)	85 (75)	114	4.6/0.4
Unique aspects of Bobath clinical practice								
		Strongly disagree 1	Somewhat disagree 2	Neither agree nor disagree 3	Somewhat agree 4	Strongly agree 5	Total count	Mean/ SD
10.	Within the Bobath concept, intervention focuses on the recovery of typical movement whilst minimizing atypical and compensatory movement dependent upon the individual's potential	1 (1)	3 (3)	6 (5)	24 (22)	76 (69)	110	4.6/0.5
11.	Within the Bobath concept, movement analysis is from the perspective of the whole body, not individual body segments	0 (0)	3 (3)	6 (5)	23 (21)	78 (71)	110	4.6/0.4
12.	Within the Bobath concept, postural control and selective movement are considered interactive and interdependent	1 (1)	0 (0)	1 (1)	15 (14)	93 (85)	110	4.8/0.2
13.	An aspect of Bobath clinical practice is the manipulation of somatosensory information to influence motor control and perception	0 (0)	0 (0)	1 (1)	23 (21)	86 (78)	110	4.8/0.2
14.	Within the Bobath concept, the therapist considers task performance as well as task completion	1 (1)	3 (3)	7 (6)	25 (23)	73 (67)	109	4.5/0.5
15.	Within the Bobath concept, movement analysis of task performance considers both the postural control and selective movement requirements	0 (0)	0 (0)	0 (0)	15 (14)	95 (86)	110	4.9/0.1
16.	Within the Bobath concept, the influence of body segment alignment on task performance is considered a key aspect of clinical practice	0 (0)	0 (0)	6 (5)	30 (27)	74 (67)	110	4.6/0.4
17.	For the Bobath therapist, selectivity of trunk and head movement is as equally important as selectivity of upper and lower limb movement	0 (0)	0 (0)	7 (6)	22 (20)	81 (74)	110	4.7/0.3
18.	The Bobath therapist considers that movement of one body segment has the potential to influence movement at an adjacent or remote body segment	0 (0)	0 (0)	1 (1)	28 (25)	81 (74)	110	4.7/0.3
19.	Facilitation is a Bobath clinical skill such that the therapist specifically manipulates sensory information through therapeutic handling, environmental and verbal cues to influence motor behavior	1 (1)	0 (0)	0 (0)	15 (14)	94 (84)	110	4.8/0.2
20.	Facilitation provides the Bobath therapist with a visuo-spatial kinesthetic perception, an aspect of professional practice knowledge, which informs their clinical reasoning process	0 (0)	0 (0)	9 (8)	29 (26)	72 (66)	110	4.6/0.4
21.	"Acceptance of base of support," the ability to receive, integrate and respond appropriately to the base of support, is a key concept within Bobath clinical practice	0 (0)	1 (1)	8 (7)	28 (26)	73 (66)	110	4.6/0.4

(Continues)

TABLE 3 (Continued)

Unique aspects of Bobath clinical practice	Likert score responses (%)					Total count	Mean/ SD
	Strongly disagree 1	Somewhat disagree 2	Neither agree nor disagree 3	Somewhat agree 4	Strongly agree 5		
22. "Placing," the person's automatic response to enhanced sensory information via facilitation of the distal segment enabling selective body segment alignment of the whole limb, is considered a key concept within Bobath clinical practice	1 (1)	4 (4)	16 (14)	32 (29)	58 (52)	111	4.3/0.7

TABLE 4 Phase 2—Web-based survey participant demographics

IBITA membership category	No. (%)
Associate	8 (7)
Full	97 (84)
Retired	5 (4)
Not given	5 (4)
IBITA instructor status	No. (%)
Instructor-candidate	6 (5)
Basic course instructor	77 (67)
Advanced course instructor	20 (17)
Senior instructor	7 (6)
Not given	5 (4)
IBITA member (number of years)	No. (%)
1–5	16 (14)
6–10	25 (22)
11–15	21 (18)
16–20	24 (21)
21–30	17 (15)
>30	7 (6)
Not given	5 (4)
Country of residence by world region	No. (%)
Asia	14 (12)
Middle East, North Africa, and Greater Arabia	3 (3)
Europe	66 (57)
North America	3 (3)
Central America and the Caribbean	1 (1)
South America	8 (7)
Sub-Saharan Africa	1 (1)
Australia and Oceania	3 (3)
Not given	16 (14)
Highest academic degree	No. (%)
DPT/PhD	12 (10)
MSc/MA	30 (26)
BScPT	28 (24)
Grad. Dip. Phys.	40 (35)
Not given	5 (4)
English as a second language	No. (%)
Yes	84 (73)
No	26 (23)
Not given	5 (4)

Note. BScPT: Bachelor of Science in Physiotherapy; DPT: Doctorate of Physiotherapy; Grad.Dip.Phys.: Graduate with Diploma of Physiotherapy; IBITA: International Bobath Instructors Training Association; MA: Master of Arts; MSc: Master of Science; PhD: Doctor of Philosophy.

19 describing movement analysis, the interactive and interdependent nature of postural control and selective movement, and the role of facilitation as unique aspects of Bobath clinical practice. This is consistent with the recent literature identifying a Bobath clinical framework (Vaughan-Graham & Cott, 2016), as well as the core tenets of IBITA instructors' conceptualization of movement (Vaughan-Graham et al., 2017). Similarly, the recent publication by Michielsen, Vaughan-Graham, Holland, Magri, and Suzuki (2017) describing a "Model of Bobath Clinical Practice" identify functional movement analysis of which postural control, selective movement, and facilitation are identified as key components of the model (Michielsen et al., 2017).

The findings of Phase 1 and 2 of this study suggest that a more extensive, but specific definition of the Bobath concept is required. The concept is no longer described as basing treatment on the inhibition of abnormal reflex activity, nor does it refer to "normal" movement, whereas facilitation continues to be a core tenet of Bobath clinical practice and is acknowledged as a clinical skill developed through professional practice (Vaughan-Graham et al., 2015a; Vaughan-Graham et al., 2017; Vaughan-Graham & Cott, 2017). There was reference to a problem-solving approach in the focus group data, indicating that the Bobath therapist is seeking to solve movement problems; however, recent literature has identified that the Bobath therapist uses a multitude of reasoning processes, such as pattern recognition, constant comparisons, and a visual-spatial kinesthetic perception (Vaughan-Graham & Cott, 2017), and it is therefore not limited to only a problem-solving approach (Edwards, Jones, Carr, Braunack-Mayer, & Jensen, 2004; Jones, Jensen, & Edwards, 2008; Vaughan-Graham & Cott, 2017). Movement analysis from the perspective of the integration of postural control and selective movement, with particular reference to alignment and base of support, the integral role of facilitation, the influence of sensory information on motor control and perception, as well as the inclusive, individualized nature of assessment and treatment taking into consideration the whole person, their goals and context, have been identified as unique characteristics of the Bobath concept.

The findings of Phase 1 and 2 form the basis for the development of statements for Round 1 of a real-time Delphi study, Phase 3 of this study, to gain consensus with the IBITA membership on core statements to enable the development of a revised definition.

4.1 | Limitations

Due to funding and time restraints the Phase 1 focus groups were undertaken concurrently and were therefore not led by a consistent

research team. This may have resulted in the focus group discussion being stimulated and guided differently. This limitation was minimized by providing each focus group moderator with instructions and guiding questions (Appendix 1). In addition, the first author was available to the focus group moderators to answer any questions related to the study. As the 2016 IBITA AGM was held in South Korea, there was a high representation of Bobath instructors of Asian background. Also, the majority of focus group participants were basic course instructors with less than 10 years of experience. This may have limited the breadth and depth of the discussions; however, all of the developed themes were congruent with the recent Bobath evidence base. As the first author was not able to attend the focus groups, field notes were not taken, and therefore, the meaning of statements or the subtlety of the conversation within the transcripts may have been misinterpreted or misunderstood. Web-based surveys rely on the familiarity of the user with internet technology; this may have limited the participation of IBITA members who are not comfortable with technology. In addition, communication for both Phase 1 and 2 was in English. This may have limited participation by some IBITA members in the focus groups as they may have not felt comfortable explaining their thoughts in English. Likewise, comprehension and written English skills may have limited participation for some with ESL. However, the majority of respondents for Phase 1 and 2 was by IBITA members who identified English as their second language.

5 | CONCLUSIONS

This study is the first of its kind within IBITA to use focus groups and a web-based survey to explore the conceptual underpinnings and unique aspects of Bobath clinical practice pertinent to a revised Bobath definition. Eight key themes, congruent with the recent evidence, were successfully developed from the focus groups providing the foundation for the development of survey statements. Of the members who responded to the survey, there was a high level of agreement on the majority of survey statements. The results of Phase 1 and 2 provide a foundation from which statements will be drafted for Phase 3. Utilizing a real-time Delphi, to be undertaken at an IBITA AGM, Phase 3 aims to gain consensus within the IBITA membership on statements on which a revised definition can be based.

5.1 | Implications for physiotherapy practice

There is widespread agreement within IBITA that a revised definition of the Bobath concept is required identifying overarching constructs as well as the unique aspects of Bobath clinical practice such that it may be placed within the context of contemporary neurorehabilitation. The use of focus groups were successful in understanding the perspectives of a group of experts in order to inform the development of a web-based survey, which in turn enabled access to a widely geographically dispersed expert group. The results of this study will inform Phase 3 demonstrating that a multi-method study design can be successfully used to develop consensus in a group of expert physiotherapists.

ORCID

Julie Vaughan-Graham  <https://orcid.org/0000-0002-0754-2094>

REFERENCES

- Bobath, B. (1970). *Adult hemiplegia: Evaluation and treatment* (1st ed.). Oxford: Heinemann.
- Carpenter, C., & Suto, M. (2008). *Qualitative research for occupational and physical therapists: A practical guide* (1st ed.). Oxford: Blackwell.
- Edwards, I., Jones, M., Carr, J., Braunack-Mayer, A., & Jensen, G. M. (2004). Clinical reasoning strategies in physical therapy. *Physical Therapy, 84*(4), 312–330.
- IBITA. (2017). Country representatives report to IBITA AGM.
- Johnson, R., & Waterfield, J. (2004). Making words count: The value of qualitative research. *Physiotherapy Research International, 9*(3), 121–131. <https://doi.org/10.1002/pri.312>
- Jones, M. A., Jensen, G., & Edwards, I. (2008). Clinical reasoning in physiotherapy. In J. Higgs, M. A. Jones, S. Loftus, & N. Christensen (Eds.), *Clinical reasoning in the health professions* (Third ed.) (pp. 245–256). London: Elsevier.
- Jones, T. A. (2017). Motor compensation and its effects on neural reorganization after stroke. *Nature Reviews Neuroscience, 18*, 267. <https://doi.org/10.1038/nrn.2017.26>–280.
- Kim, A. S., & Johnston, S. C. (2011). Global variation in the relative burden of stroke and ischemic heart disease. *Circulation, 124*(3), 314–323. <https://doi.org/10.1161/CIRCULATIONAHA.111.018820>
- Kollen, B., Lennon, S., Lyons, B., Wheatley-Smith, L., Scheper, M., Buurke, J., ... Kwakkel, G. (2009). The effectiveness of the Bobath concept in stroke rehabilitation: What is the evidence? *Stroke, 40*, e89–e97. <https://doi.org/10.1161/STROKEAHA.108.533828>
- Krueger, H., Koot, J., Hall, R. E., O'Callaghan, C., Bayley, M., & Corbett, D. (2015). Prevalence of individuals experiencing the effects of stroke in Canada: Trends and projections. *Stroke, 46*(8), 2226–2231. <https://doi.org/10.1161/strokeaha.115.009616>
- Lekander, I., Willers, C., von Euler, M., Lilja, M., Sunnerhagen, K. S., Pessah-Rasmussen, H., & Borgström, F. (2017). Relationship between functional disability and costs one and two years post stroke. *PLoS One, 12*(4), e0174861. <https://doi.org/10.1371/journal.pone.0174861>
- Levin, M., & Panturin, E. (2011). Sensorimotor integration for functional recovery and the Bobath approach. *Motor Control, 15*(2), 285–301. <https://doi.org/10.1123/mcj.15.2.285>
- Michielsen, M., Vaughan-Graham, J., Holland, A., Magri, A., & Suzuki, M. (2017). The Bobath concept—A model to illustrate clinical practice. *Disability and Rehabilitation, 1*–13. <https://doi.org/10.1080/09638288.2017.1417496>
- Raine, S. (2006). Defining the Bobath concept using the Delphi technique. *Physiotherapy Research International, 11*, 4–13. <https://doi.org/10.1002/pri.35>
- Raine, S. (2007). The current theoretical assumptions of the Bobath concept as determined by the members of BBTA. *Physiotherapy Theory and Practice, 23*(3), 137–152. <https://doi.org/10.1080/09593980701209154>
- Rea, L. M., & Parker, R. A. (2005). *Designing and conducting survey research a comprehensive guide* (Third ed.). San Francisco: John Wiley & Sons.
- The Oxford handbook of qualitative research. (2014). (P. Leavy Ed. 1st ed.). Oxford: Oxford University Press.
- Thorne, S. (2008). In J. M. Morse (Ed.), *Interpretive description* (1st ed.). Walnut Creek, California: Left Coast Press Inc.
- Vaughan-Graham, J., & Cott, C. (2016). Defining a Bobath clinical framework—A modified e-Delphi study. *Physiotherapy Theory and Practice, 32*(8), 612–627. <https://doi.org/10.1080/09593985.2016.1228722>
- Vaughan-Graham, J., & Cott, C. (2017). Phronesis: Practical wisdom the role of professional practice knowledge in the clinical reasoning of Bobath instructors. *Journal of Evaluation in Clinical Practice, 23*(5), 935–948. <https://doi.org/10.1111/jep.12641>

- Vaughan-Graham, J., Cott, C., & Wright, F. V. (2015a). The Bobath (NDT) concept in adult neurological rehabilitation: What is the state of the knowledge? A scoping review Part I: Conceptual perspectives. *Disability and Rehabilitation*, 37(20), 1793–1807. <https://doi.org/10.3109/09638288.2014.985802>
- Vaughan-Graham, J., Cott, C., & Wright, F. V. (2015b). The Bobath (NDT) concept in adult neurological rehabilitation: What is the state of the knowledge? A scoping review. Part II: Intervention studies perspectives. *Disability and Rehabilitation*, 37(21), 1909–1928. <https://doi.org/10.3109/09638288.2014.987880>
- Vaughan-Graham, J., Patterson, K., Zabjek, K., & Cott, C. (2017). Conceptualizing movement by expert Bobath instructors in neurological rehabilitation. *Journal of Evaluation in Clinical Practice*, 23(6), 1153–1163. <https://doi.org/10.1111/jep.12742>
- Vaughan-Graham, J., Eustace, C., Brock, K., Swain, E., & Irwin-Carruthers, S. (2009). The Bobath concept in contemporary clinical practice. (Grand Rounds) (Report). *Topics in Stroke Rehabilitation*, 16(1), 57–68. <https://doi.org/10.1310/tsr1601-57>

How to cite this article: Vaughan-Graham J, Cott C, Holland A, et al. Developing a revised definition of the Bobath concept. *Physiother Res Int*. 2019;24:e1762. <https://doi.org/10.1002/pri.1762>

APPENDIX A

FOCUS GROUP INSTRUCTIONS AND GUIDING QUESTIONS

A.1 | Focus group instructions

Thank you for agreeing to participate in this focus group. The focus group is Phase 1 of a study whose aim is to develop a revised definition of the Bobath concept. The purpose of the focus group is to gather the range of perspectives on the unique aspects of Bobath clinical practice. For the focus group to be successful, it is important that everyone is respectful of their fellow focus group participants. Please do not interrupt your fellow participants even if they are making a statement that you do not agree with. If there are a number of participants wishing to speak on a specific topic, I will identify an order to ensure all voices are heard. The focus group discussion is to be confidential; please therefore do not discuss the content of the discussion with anyone outside of the focus group, and please do not identify any specific participant with a specific comment. Please speak slowly and

clearly to be sure that all participants hear your comments. The entire content of the focus group will be audio-recorded, but you will not be personally identified.

A.2 | Guiding questions for the focus group

Open ended questions will be primarily used as these have a greater tendency to yield rich data, for example:

“What are your thoughts on...,” “Tell me about...,” “Could you talk to me further...”

Some examples of potential questions may include the following:

1. The Bobath concept was defined in 1995 as follows: “A problem-solving approach to the assessment and treatment of individuals with disturbances of function, movement, and postural control due to a lesion of the CNS.” Do you think this adequately describes the Bobath concept?
2. If not, what would you like to change in this definition?
3. The Bobath concept has recently been described as “An inclusive, individualized, problem-solving, living concept based on a systems approach to motor control, with particular emphasis on movement analysis and motor recovery from the perspective of the integration of postural control, task performance and contribution of sensory inputs.” Do you think this adequately describes the Bobath concept?
4. If not, what you like to change in this description?
5. What do you think are the essential aspects of the Bobath concept that should be included in a revised definition?
6. What do you think makes Bobath clinical practice unique?
7. The Bobath concept has been described as providing the therapist with a unique set of skills with respect to movement analysis and the use of sensory input. What are your thoughts on this statement?
8. What is your understanding of postural control and selective movement from the perspective of the Bobath concept?
9. How does this relate to movement quality/performance?
10. Is there a role of task practice in the Bobath concept?
11. What is your understanding of “facilitation” and how important is it within the Bobath concept?