

REDEFINITION OF KINESIOLOGICAL PROCESSES

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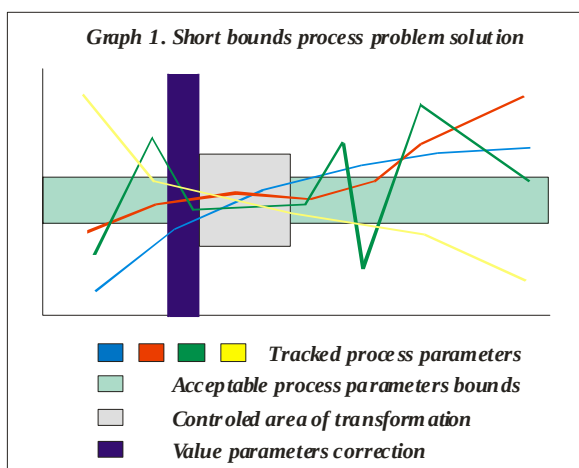
Abstract

With special methodology for process identification, we transform initial data to forms that represent main basic processes visible in any sample. Redefinition includes avant-garde approach that describes processes on three-function level as: Persistency, Development and Integration. These processes can be also interpreted as: Defensive acting, Offensive acting and Connection acting. On that basis we recommend future process programming in kinesiology.

Key words: process, continuum, defense, offense, connection

Introduction

Conventionally, process in general is a continual set of different variable values of some objects visible over several time points. In order with that definition, we obviously have to prepare specific metric instruments for definition of some "measured" virtual space. Within that space, we wish to analyze some interesting objects in manner of their changes. This approach is well known and very often in kinesiology, likewise in all other disciplines. Results generated under such model presents one possible global dimension of transformation types. That dimension is generally marked with area of variables or higher latent dimensions (factors). Therefore, in very rare cases, that approach can give us some useful information about structure changes in sense of clusters of objects, but in that situation we still observe transformation manifestations of objects described in time. Limitations of such logic are more than clear, just because of basic definitions of processes in terms of object characteristics, which irrefutable lead us to control of short bounds of object behavior (Graph 1.). Of course, consequences of such approach are



continual disorders, impossibility of object guidance and need for permanent interventions. Although seems that object characteristics are final aim of our researches, globalization of scientific comprehensions lead us to suggestions which are far from such simple conclusions. This paper offers radically different approach. Concerning a process is conception of any kind of changes, construction of local procedures for time points hypothesis proofing is not sufficient any more.

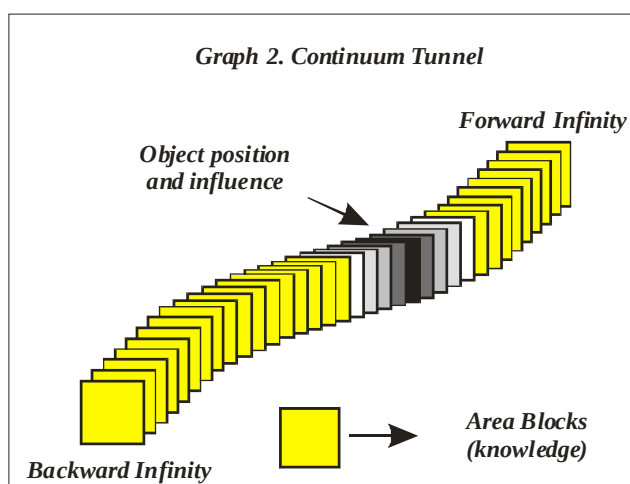
This attitude stands especially because we always deal with cumulative effects of previous "unmeasured" periods, which are definitely included in all our data streams. New concept of data analysis incorporates and respects everything that happens in passed periods and affects our data in any possible way.

Human is a complex bio-psycho-sociologic entity that passes various development and transformational phases through its life (Katić at all 2001., Luria 1983., Malina 1984., Piaget 1968.). All of those phases are marked with unchangeable influence of exercising, integrated in total human composition (Mraković 1992.). Neither one human activity is "spared" of that influence and result of each individual depend of appropriate level of cumulative kinesiology knowledge incorporated in total individual integrity, as movement control or as appropriate energetic integration, or both (Katić at all 2001., Mraković 1992.). This means that we cannot just "offer" some blocks of paradigmatic types of exercising, without scientific established and proofed programs (Malacko and Rađo 2004., Malina 1984, Mraković 1992.) It is not acceptable that "market" regulates quality of programs without real scientific competencies. From various sides and from various aspects we offer various exercise programs to various groups of entities, and that whole bunch we too often call treasure (in Latin manner: "*varietas delectat*"). Therefore, our children participate in educational programs under developmental models. Some of them, as very young, participate in agonistic sport model programs. For few percent of children with development and other problems we, of course, organize special activities programs. To 2-3 % of adults of app. 20-30 years, we can offer leagues and other types of competition activities, up to top-level sports. Some number of adults generally participates in specialist curative treatments after sport, traffic, professional and other injuries or diseases. For all others of that age (and some other entities), we gladly think as of people included in some type of recreational activities. With middle-aged people, we try to create exercise habits as health prevention in relation with lifestyle consequences. Finally, with older groups or individuals we organize some energetic low-level activities as typical condition for health preservation. Maybe all of that seems very rich and acceptable, but it is generally inappropriate dispersion and dissociation, because mentioned areas, as kinesiology utilities, do not present integrated scientific model. Reflections of those different models results in bad criteria definitions, so exercise exist in forms with at least doubted determinants. It is impossible to generate efficient kinesiology programs for particular, aged or differently defined groups of entities, without consistent, complete and very clear global comprehension model for exercise, as articulation of clear common theory (Bonacin 2005., Malina 1984., Mraković 1992.). In this modest article, we will offer you a model that pretends to be a generalization off crucial fundamentals that unifies all theoretical approaches. Basic questions of all such theories always consider same doubts like nature principles, elements combinations, individuality (Akvisinski 1996.), or searching for logical invariant essence of Universe (Akvisinski 1996., Hawking 1988.), or construction of reality through mental life development (Piaget 1955.) accepting conceptual thought from sensorimotor intelligence. Some scientists courageously established basics of deterministic natural laws (Newton), and sometimes social development theories (Cleveland and Jacobs 1999.) try to establish specific types of hierarchical existence over learning through "social operating systems" and authorities, just like the constructivistic approaches generates conceptual objectives for optimal forms of knowledge transfer (Bloom 1956.). Furthermore, we can register similar indistinctive situation and doubts in different approaches, like materialistic and spiritual models that concentrate tensions in confused theories like Cognitive model domains (Skinner 1989.).

In our days, especially "attractive" ideas come from confusing Chaos models (Cardeira at all 1990.), or even singularity models (Hawking 1988.) that represents only strictly local solutions, just as Heisenberg's In-deterministic principle (Strnad 1990.). Unfortunately, that theories have all failed in the moment of complete generalization, so giant amount of logical conclusions and concrete situations do not comply with principles of such theories. In kinesiology, this means that we do not have clear permanent strong point for strategy planning and operational synthesis of reproducible scientific based activities. Finally, as normal consequence, too many of our "programmed" activities lays out of acceptable bounds and are contaminated with important amount of inconsistency and errors. From scholasticism and structuralism, through behaviorism and genetic epistemology (Piaget 1968.), up to constructivism, existentialism, relativism (Strnad 1990.) and singularity, there is no completeness and absolute correspondence of main principles and natural laws. Consequently, kinesiology programs creation is inconsistent and depends of individual standings or attitudes more than it is scientifically acceptable.

Methodological basics

As we all know, many philosophers and scientists for centuries try to explain Universe existence, questions of purpose, development, individuality and other Universe logical premises. Owing to them, we can establish our methodological (including in kinesiology) basics in order with theory we find suitable for project definitions and explanation of our findings. However, we must assume that presence of theories, which number is bigger than one (and no one theory includes all others), means that probably all of them have failed. In that context, for this paper purposes, we will follow an idea of Comprehensive Continuum (Bonacin 2005, Bonacin and Carev 2002) in manner of Continuum Tunnel that explains development, knowledge, comprehension, object position etc. much better then all other existent scientific theories (Graph 2.). Total comprehensions of any individual object are evidently different from all others. That characteristic defines appropriate development position, as visible on graph. However, another important logical dimension exists, a dimension that explains maximization of information in local area. That kind of information, in terms of continuum, is not comprehension but just knowledge.



Knowledge, no meter how big, is local collection of information that insures expansion and application on particular artificial comprehension level. This dimension has no frontiers too, but expansion and wideness of this dimension only maximizes transversal Continuum component without unconditional affecting of object in sense of higher repositioning through Continuum. For progress, approaching Continuum forward infinity, a minimal surface of transversal

component is quite enough. Of course, that is possible if Continuum comprehensions are immanent to object, and if the object accepts its actual position trying to advance.

Everything more is only a loss of resources and capacities. In such Continuum, we are not talking of Time points but Comprehensive points exclusively. Process in such continuum is nothing but accumulation and structuring of comprehensions, no meter if they are resources, information or anything else. Exactly because everything is determinate, we are able to find laws and regularities that are existent in variably conditions and repeatable. That is what science is dealing with. Under described conditions, processes in kinesiology contain completely different and very new meaning. Simple project will explain ideas of that methodological approach.

Methods

The sample was comprised of 249 children measured three times through 18 months, primary school first formers from Split, who, at the beginning of the experimental procedure, were 7 years +/- 2 months old. All the children had no visible aberrations, and they were all able to participate in a normal program of work in primary school. **The sample of variables** necessary for the assessment was selected in such a way as to cover both the morphological and the motor status: body height (AVIT), arm length (ADUR), leg length (ADUN), biacromial width (ASIR), bicrystal width (ASIK), knee diameter (ADIK), wrist diameter (ADRZ), body weight (ATEZ), chest circumference (AOGK), lower leg circumference (AOPK), forearm circumference (AOPL), skinfold of the back (AKNL), upper arm skinfold (AKNN) and abdominal skinfold (AKNT). All the measures were taken according to the international biological program. The following variables were used for the assessment of the motor status: side steps (MKUS), held part in the hang (MVIS), long jump from a standstill (MSDM), standing on the bench (MP20), polygon backwards (MPOL), sit-ups (MDTS), 20m run from a standing start (M20V), straddle forward bend (MPRR), hand-tapping (MTAP), foot-tapping (MTAN) and throwing the ball for distance (MBLD), 3-min run (FT3M) was used to assess the aerobic work. All the measurements were done by qualified people who had significant experience in collecting the aforementioned initial data. **The data processing methods** implied everything from the metric characteristics, over the elementary statistical indicators, up to the multivariate methods. First step of complex data analysis includes concatenating of all three measures to provide data streams of 747 locations. For common data part preservation there was used image analysis over all 747 "entities". After that we apply polar taxon analysis, and finally Analysis for process identification (Bonacin 2005, Bonacin and Carev 2002.). Structure of comprehension taxons describes processes that really exists in that sample.

Results and discussion

Although seems that results are given in standard manner, it is critical to understand that Table 1 shows three main processes. First is Energetic and other recourses accumulation or, in order with Continuum definitions Persistent acting (CH1). This characteristic includes everything from far past until today for self-preservation. We built everything else around that our axis of force and strength, which grows under specific physical circumstances. It includes body mass in all forms of different bones and other internal and external volume characteristics. Without that, we will not be able to endure and exist in various natural conditions. More expressed Persistent acting – bigger chance for survival and develop.

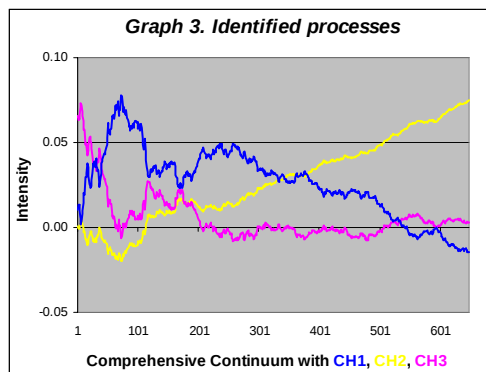
We can mark this characteristic as some kind of little passive comprehension but it is essential for existence, because it represents our defensive potential. In terms of kinesiology, we can name it as Antagonistic acting. It obviously starts very low on the Continuum Tunnel, and is logically very old, although we will "carry" it with us for a long time in future comprehensions. There is no need for special discussion that this characteristic is slowly losing its dominance in human's existence.

Table 1. Three main processes over composite sample and variance (λ)

	CH1	CH2	CH3
AVIT	0.99	0.09	-0.34
ADUR	0.98	0.10	-0.36
ADUN	0.96	0.11	-0.38
ASIR	0.80	0.09	-0.09
ASIK	0.81	0.22	-0.13
ADIK	0.83	-0.03	-0.06
ADRZ	0.73	0.01	0.10
ATEZ	0.86	0.24	0.17
AOGK	0.65	0.17	0.28
AOPK	0.69	0.20	0.29
AOPL	0.62	0.23	0.39
AKNL	0.10	0.54	0.65
AKNN	0.01	0.60	0.66
AKNT	0.05	0.60	0.65
MKUS	-0.24	0.64	-0.12
MPOL	-0.19	0.69	-0.13
MP2O	0.23	-0.47	0.11
MPRR	0.29	-0.33	0.08
MTAP	0.05	-0.53	0.43
MTAN	0.10	-0.57	0.39
MSDM	0.15	-0.73	0.16
MBLD	0.32	-0.49	0.18
M20V	-0.14	0.64	-0.24
MDTS	0.25	-0.58	0.23
MVIS	0.05	-0.65	0.01
MT3M	0.25	-0.57	0.06
λ	7.97	5.42	2.48

All composite elements of CH1 are organic, of course, but in the same time, they represent nothing "alive", so describe pieces of stones, water, metals, Earth and Sun adequately incorporated in our bodies. On the other side of such thinking, there stands Develop acting (CH2). As we can see, all movement characteristics make such combination, with persuasive composite, which can efficiently act in entity environment. Just as CH1 represents internal accumulation, CH2 is nothing but managing and manipulation with external objects. That possibility includes self-repositioning in natural environment, because of easy understandable changeable environmental natural conditions that affect any entity. Solving problems connected with any kind of other entities is directly under control of this characteristic. As CH1 is essential for long-term survival and defense, CH2 is essential for develop of routines for long-term acting and attacking, which means that this characteristics represents our offensive potential. In terms of kinesiology, we can name it as Agonistic acting. Through Comprehensive Continuum, this characteristic is newer in existence, and we must agree that attacking (or offense) is main human factor of our centuries, and will be for many more. In its essentials, CH2 represents accumulation and nature of life and leads us to higher continuum levels. Finally, CH3 describes Integrative process especially through first third of presented Continuum when integration must harmonize everything else. This process must ensure two main important things. One is energetic reserves regulation for actual and future acting, and the other is information disposition. Information component is clear and plays important role because of better recognition of various objects, object anticipation and manipulation, and semantic projection of other object future behavior, just as in the internal comprehension organization and optimal regulation of self-component in multidimensional space. Adequate optimal control of energetic reserve resources represents experience and anticipation of needs too, so CH3 is nothing but Regulation acting for optimization purposes, with maximization of interpolation, or in terms of kinesiology - Regulative acting.

In Comprehensive Continuum, that is obviously important comprehensive category. We all know that



anticipation is important human global characteristic and represents power of information manipulation. Third process (CH3) regulates relations between entity and its environment, but also between first two mentioned processes, ensuring homeostatic balance in variable conditions that entity is exposed, in middle term acting. Graph 3 illustrates importance of those processes in continual development phases without any doubt.

Conclusion

With special methodology concept, on specified level, we identify three main processes in completely new manner. Those processes we describe as:

- a) Persistent acting (Defense, old process, antagonistic),
- b) Develop acting (Offense, attacking, young process, agonistic), and
- c) Integrative acting (Connection, optimization, "middle aged process", regulation,)

Under exposed model, seems to be much easier to construct any kind of different programs for kinesiology purposes (education, active sport, recreation, health prevention, curative treatments, etc.).

References

1. Akvinski T. (1996). *Opuscula philosophica*. Filozofska biblioteka D.S. (prev. A.Pavlović).
2. Bloom, B.S. (Ed.) (1956) *Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain*. New York ; Toronto: Longmans.
3. Bonacin, D (2005). *Comprehensive Continuum. 1 st International Symposium - New Technologies at Sport, Proceedings*, Sarajevo.
4. Bonacin, D., Carev. Z. (2002). Process identification. *Kinesiology – new perspectives, III international scientific conference, Proceedings* : 632-635., Opatija.
5. Cardeira, H. A. at all (ur.) (1990). *Quantum Chaos*. Adriatico research and Miniworkshop.
6. Cleveland, H., Jacobs, G. (1999). *Human Choice: The Genetic Code for Social Development*. World Academy of Art & Science.
7. Hawking, S. W. (1988). *A brief history of time*. Hawking, London.
8. Katić, R., Bonacin D., Blažević, S. (2001). Phylogenetically conditioned possibilities of the realisation and of the development of complex movements at the age of 7 years. *Collegium antropologicum*, 25,2 : 573-583.
9. Luria, A. R. (1983). *Osnovi neuropsihologije*. Nolit, Beograd.
10. Malacko, J., Rađo, I. (2004). *Tehnologija sporta i sportskog treninga*. Faculty of Sport and Physical Education, Sarajevo.
11. Malina, R.M. (1984). Human growth, maturation and regular physical activity. In: Boileau, RA., ed. *Advances in Pediatric Sports Sciences*. Champaign, IL : Human Kinetics: 59-83.
12. Mraković, M. (1992). *Uvod u sistematsku kineziologiju*. FFK, Zagreb.
13. Piaget, J. (1968). *Genetic epistemology*. Columbia University Press.
14. Piaget, J. (1955). *The Construction of Reality in the Child*. Routledge and Kegan Paul.
15. Skinner, B. F. (1989). *Recent Issues in the Analysis of Behavior*. Merrill Publishing.
16. Strnad, J. (1990). *Mala kvantna fizika*. Školska knjiga, Zagreb.