



# Effects of a Drums-Alive® Intervention in Children with Developmental Delays

Wright, P.R.<sup>1</sup>; Liebich, M.<sup>2</sup>; Langenkamp, H.<sup>3</sup>; Ekins, C.<sup>1</sup>; Schulz, H.<sup>1</sup>

<sup>1</sup>Chemnitz University of Technology, Sports Medicine; <sup>2</sup>Kath. Kindergarten St. Theresien, Bochum; <sup>3</sup>Ruhr-Universität Bochum, Sport Psychology

## INTRODUCTION

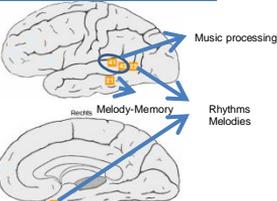
Children in Germany show more and more frequently developmental disorders and/or -delays with negative effects on social activities, self-esteem as well as personal development. To prevent these and other negative effects, specific support is sensible.

In this context a comparison between different interventions, combining aspects of music and exercise therapy, is of particular interest. Especially the combination of drumming and exercise seems to be promising as mankind traceable has been drumming since the Late Neolithic. In the course of human history drumming has become extremely important in all human cultures (FIGL, 2003). Hence a high compliance of the children is expected.

This study examined the effects of a DRUMS ALIVE® Intervention, which combines exercise with aspects of music therapy and especially drumming in children with developmental deficits (behaviour, motor skills, speech) compared to a control group of equal age.

## THEORETICAL BACKGROUND

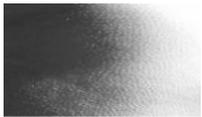
### Brodman-Areas



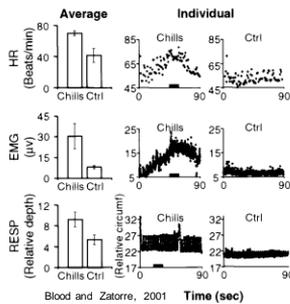
### Limbic System:

- Emotions
- Smelling
- Autobiographic memory

### Gooseflesh experience caused by music



Gooseflesh in order to listening to music is caused by the activation of the reward centre of the limbic system and causes similar activations as induced by Sex or Cocain.

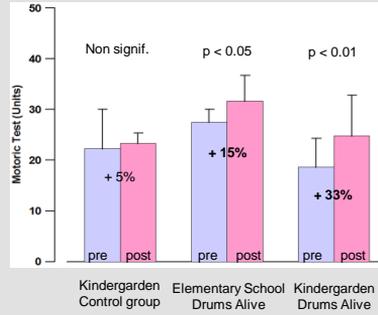


Via this mechanism plus the impact of exercise, the positive effects could theoretically increase and a new specific intervention for children with developmental delays can be developed.

## RESULTS

### MOTOR FUNCTION TEST

The motor skills (Dusseldorf Motor-skill-test) improved by 30% in the IG from 20.4 (SD 5.5) to 26.4 (SD 5.3) points (p<0.01) above the level of the CG (pre 22.3 (SD 8.2), post 23.3 (SD 7.7)).



### BEHAVIOUR

The monitoring of behaviour during the investigation (compliance with rules, increased concentration and awareness as well as creativity) showed individually significantly better results (qualitative).



Child	Indication	Behaviour pre-interventional	Behaviour post-interventional
A	Former integrative child	Lack of self-esteem Weaknesses in coordination	Better coordination towards the end of the project
B	Emotional Outbursts	Lack of self-esteem Poor impulse control Good cognitive development	Improvement in following rules Was able to be creative
C	ADHD Former integrative child	Hyperactive Impulse-controlled behaviour Lack of constancy	Reduced bursts of anger Better consistency through differentiated praise
D	Very homogenous Strong competences	Homogeneously developed child Good motor skills	Development of joy and creativity
E	Challenging Character	Creative Undersent unaccepting behaviour	Was very creative Got consistently better in sticking with the rules
F	Uncertainty	Lack of self-esteem Poor impulse control	Creative moments Toward the end of the project constant compliance
G	Unilaterally deaf Visual deficits	Lack of concentration Undisciplined and impulsive behaviour	Partly sticked by the rules Good concentration over a period of 30 minutes through constant contact & praise
H	Triple-X-Syndrom	Unwilling to venture anything new Lack of self-esteem Balance problems	Good compliance with rules Started drumming with wooden spoons on boxes at home
I	Autistic tendencies Emotional deficits	Unsocial Regression of fine and gross motor skills	Was able to present himself creatively, positive motor skill development
J	Fear of loss (sudden death of father)	Lack of self-esteem Weaknesses in coordination	Took part and was active until the end
K	Poor coordinative skills	Lack of self-esteem Weaknesses in coordination	Was very involved Tried to participate

### STATEMENTS

#### Children

"I love drumming!"  
"When are we going to drum again?"  
"Thank you so much for the great drumming-time!"  
"When I am grown up, I will be a drummer!"

#### Parents

"Our child spoke enthusiastic about the drumming."  
"Where can we buy a ball and drum sticks?"  
"My son had tears in his eyes when I told him that next time will be the last drumming session."  
"During the intervention there were no conflicts or stress at home. That's just crazy!"

#### Teacher

"Since three weeks your son is much more concentrated during the English lessons. Has something changed at home?"  
Answer of the mother: "He is drumming since 3 weeks!"  
The teacher is now going to do a Drums Alive Certification training to drum with the children herself!

## METHODS

The aim of the presented study was to examine the effect of a DRUMS ALIVE® Intervention – a combination of Drumming on big gymnastic balls and exercise – on motor skills and behaviour in kindergartners with developmental delays in the area of motor function, concentration and impulse control (n=16; 4.9-6.7 years, IG) in comparison to children of normal development (n=10; 4.1-6.1 years, CG). The intervention was carried out twice a week over a duration of four weeks.

### PROBANDEN

Institution	Age/years & n	Profile
Kindergarten	4.9-6.7 n = 16	2 Integrative children, with deficiencies in the field of motor function, concentration and impulse control
Elementary school	4.9-6.7 n = 10	With the above-named Handycaps
Kindergarten	4.1-6.1 n = 10	Kontrollgruppe

### TESTPROFILE

Test	Timepoint
Dusseldorf Motor-Skill-Test	Pre & Post
Anthropometry	Pre & Post
Documentation of behaviour	Intervention

### INTERVENTION

The Drums Alive® classes were carried out twice a week (45-60 minutes) over a duration of four weeks, integrated in everyday school and kindergarten life. Thereby different drumming and exercise patterns to age-appropriate music have been combined.

## CONCLUSIONS

All children showed partly significant improvements in all subareas of motor function. Statements of the children and also the monitoring of behaviour (compliance with rules, increased concentration and awareness as well as creativity) show the complex potential of DRUMS ALIVE®. Children can be reached on an emotional level and develop high enjoyment of learning. Therefore the support of the children to be achieved could possibly be more effective than by other measures/interventions. Based on the presented study a conclusive comparative assessment to different exercise-therapy interventions is not yet possible. However, the potential of a age-specific DRUMS ALIVE® Intervention should be further investigated.

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