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The effects of International Poi on physical, cognitive, and emotional health in healthy older adults

Kate Rieggle-Van West

2017

Abstract

We are currently experiencing unprecedented population ageing worldwide, and effective, affordable strategies for maintaining quality of life are urgently needed. International Poi involves swinging a weight on the end of a cord in circular patterns around the body. The aim of this thesis was to investigate the effects of International Poi, as compared to Tai Chi, on physical, cognitive, and emotional health in healthy older adults. Seventy-nine participants (60 – 86 years old) were randomly allocated to the International Poi or Tai Chi group. Physical and cognitive function were measured one month before, immediately before, immediately after, and one month after the intervention (2 lessons a week for 4 weeks). Follow-up questionnaires were administered after each lesson, immediately after the intervention, and one month after the intervention. Immediately post intervention both groups improved postural stability, upper limb strength, and simple attention. The Tai Chi group also improved systolic blood pressure. One month post intervention, compared to immediately post intervention, both groups improved upper limb strength, upper limb range of motion, and memory. The poi group also improved systolic blood pressure. Questionnaire results showed both groups felt primarily relaxed during the intervention, with the International Poi group feeling more challenged and happy, and the Tai Chi group feeling more calm and peaceful. The majority of participants reported wanting to continue their practice, suggesting both activities are enjoyable. This was the first study to scientifically investigate the effects of International Poi on health in older adults. Based on this thesis, it can be concluded that International Poi seems to be as effective as Tai Chi for improving health in healthy older adults, and that International Poi and health is a legitimate area of scientific research. The possibilities for future poi and health research are vast, and the need for such research is paramount in order to replicate results, better understand potential long-term benefits, and begin to make recommendations for policy makers and practitioners regarding poihealth initiatives.

Changes in Gray Matter Induced by Learning

Joenna Driemeyer, Janina Boyke, Christian Gaser, Christian Büchel, Arne May

2008

Abstract

Recently, activation-dependant structural brain plasticity in humans has been demonstrated in adults after three months of training a visio-motor skill. Learning three-ball cascade juggling was associated with a transient and highly selective increase in brain gray matter in the occipito-temporal cortex comprising the motion sensitive area hMT/V5 bilaterally. However, the exact time-scale of usage-dependant structural changes occur is still unknown. A better understanding of the temporal parameters may help to elucidate to what extent this type of cortical plasticity contributes to fast adapting cortical processes that may be relevant to learning.

Using a 3 Tesla scanner and monitoring whole brain structure we repeated and extended our original study in 20 healthy adult volunteers, focussing on the temporal aspects of the structural changes and investigated whether these changes are performance or exercise dependant. The data confirmed our earlier observation using a mean effects analysis and in addition showed that learning to juggle can alter gray matter in the occipito-temporal cortex as early as after 7 days of training. Neither performance nor exercise alone could explain these changes.

We suggest that the qualitative change (i.e. learning of a new task) is more critical for the brain to change its structure than continued training of an already-learned task.

Behavioral Impact of Unisensory and Multisensory Audio-Tactile Events: Pros and Cons for Interlimb Coordination in Juggling

Gregory Zelic, Denis Mottet, Julien Lagarde

2012

Abstract

Recent behavioral neuroscience research revealed that elementary reactive behavior can be improved in the case of cross-modal sensory interactions thanks to underlying multisensory integration mechanisms. Can this benefit be generalized to an ongoing coordination of movements under severe physical constraints? We choose a juggling task to examine this question. A central issue well-known in juggling lies in establishing and maintaining a specific temporal coordination among balls, hands, eyes and posture. Here, we tested whether providing additional timing information about the balls and hands motions by using external sound and tactile periodic stimulations, the later presented at the wrists, improved the behavior of jugglers. One specific combination of auditory and tactile metronome led to a decrease of the spatiotemporal variability of the juggler's performance: a simple sound associated to left and right tactile cues presented antiphase to each other, which corresponded to the temporal pattern of hands movement in the juggling task. A contrario, no improvements were obtained in the case of other auditory and tactile combinations. We even found a degraded performance when tactile events were presented alone. The nervous system thus appears able to integrate in efficient way environmental information brought by different sensory modalities, but only if the information specified matches specific features of the coordination pattern. We discuss the possible implications of these results for the understanding of the neuronal integration process implied in audio-tactile interaction in the context of complex voluntary movement, and considering the well-known gating effect of movement on vibrotactile perception.

Much work has gone toward identifying robust rules for multisensory combination and integration. Firstly, when compared to uni-sensory events, two or more sensory cues from distinct modalities with spatial or temporal congruency can elicit a better spatial detection, orientation behavior, or shorter reaction time. Secondly, departure of multimodal environments from spatial contiguity and/or synchrony fails to improve such elementary behaviors when compared to unimodal performances, but can facilitate the execution of other type of tasks, for instance the identification of a temporal gap between events. These two cross-modal phenomena can be tentatively classified respectively as integration, to express a degree of fusion between functional units (e.g., percepts, actions), and as segregation, to indicate a degree of separation between units.

One specific combination of auditory and tactile metronome decreased of the spatiotemporal variability of the juggler's performance: a sound associated to left and right tactile cues presented antiphase to each other, the latter which corresponded to the temporal pattern of hands movement in the juggling task. Differently we found that tactile cues presented alone increased the behavioral variability. Because audio-tactile events efficiently complemented vision in the regulation of movements in a challenging task and under severe physical constraints, we argue that this class of bimodal combination could, if properly scaled, be used in a wide class of applications to guide and stabilize behavior in the case of efficient or deficient behavior, to accelerate skill acquisition or rehabilitation, and to improve prosthesis. Whether such applications are sought within a limb or between limbs, the coordination has to be carefully analyzed to identify which information, spatial and temporal, should be specified to benefit from a multimodal synergy. Clearly such direction of research could widen the set of laws already established for multisensory integration, namely the laws of inverse effectiveness and coincidence in time and space.

Training induces changes in white-matter architecture

Jan Scholz, Miriam C. Klein, Timothy E. J. Behrens, Heidi Johansen-Berg

2009

Abstract

Although experience-dependent structural changes have been found in adult gray matter, there is little evidence for such changes in white matter. Using diffusion imaging, we detected a localized increase in fractional anisotropy, a measure of microstructure, in white matter underlying the intraparietal sulcus following training of a complex visuo-motor skill. This provides, to the best of our knowledge, the first evidence for training-related changes in white-matter structure in the healthy human adult brain.

Juggling Enhances Connections In The Brain

University of Oxford

2009

Abstract

Learning to juggle leads to changes in the white matter of the brain, a new study has shown. 'We tend to think of the brain as being static, or even beginning to degenerate, once we reach adulthood,' says the researcher who led the work. 'In fact we find the structure of the brain is ripe for change. We've shown that it is possible for the brain to condition its own wiring system to operate more efficiently.'

Juggling as Brain Training

Bogdan Draganski, Volker Busch

2013

Abstract

The physical skill of juggling can change the brain's structure and function for the better, and may be a recommended therapy for brain injuries. Volunteers showed transient and selective structural changes in the left parietal lobe's posterior cortex and bilateral central temporal areas of the brain, areas associated with processing and storing complex visual motion on used whole-brain magnetic-resonance imaging.

Jugglers showed significant increase in the brain's "gray matter," nerve cells' bodies responsible for information processing, located in the hippocampus (memory formation), bilateral nucleus accumbens (reward systems that may lead to action) and visual cortex's middle temporal area. Without practice during the three months after the training, none of the volunteers retained their ability to juggle and their gray matter declined to pre-training levels.

This suggests the value of continued practice in physical and cognitive skills to maintain brain structure and function.

Neuroplasticity: Changes in grey matter induced by training

Bogdan Draganski, Christian Gaser, Volker Busch, Gerhard Schuierer, Ulrich Bogdahn & Arne May

2004

Abstract

Does the structure of an adult human brain alter in response to environmental demands? Here we use whole-brain magnetic-resonance imaging to visualize learning-induced plasticity in the brains of volunteers who have learned to juggle. We find that these individuals show a transient and selective structural change in brain areas that are associated with the processing and storage of complex visual motion. This discovery of a stimulus-dependent alteration in the brain's macroscopic structure contradicts the traditionally held view that cortical plasticity is associated with functional rather than anatomical changes.

Effect of juggling therapy on anxiety disorders in female patients

Toshihiro Nakahara

2007

Abstract

The aim of this study was to investigate the effect of juggling therapy for anxiety disorder patients.

Subjects were 17 female outpatients who met the DSM-IV diagnostic criteria for anxiety disorders. Subjects were treated with standard psychotherapy, medication and counseling for 6 months. For the last 3 months of treatment, subjects were randomized into either a non-juggling group (n = 9) or a juggling therapy group (juggling group: n = 8). The juggling group gradually acquired juggling skills by practicing juggling beanbags (otedama in Japan) with both hands. The therapeutic effect was evaluated using scores of psychological testing (STAI: State and Trait Anxiety Inventory, POMS: Profile of Mood Status) and of ADL (FAI: Franchay Activity Index) collected before treatment, 3 months after treatment (before juggling therapy), and at the end of both treatments.

After 6 months, an analysis of variance revealed that scores on the state anxiety, trait anxiety subscales of STAI and tension-anxiety (T-A) score of POMS were significantly lower in the juggling group than in the non-juggling group ($p < 0.01$). Depression, anger-hostility scores of POMS were improved more than non-jugglers. In the juggling group, activity scores on the vigor subscale of POMS and FAI score were significantly higher than those in the non juggling group ($p < 0.01$). Other mood scores of POMS did not differ between the two groups.

These findings suggest that juggling therapy may be effective for the treatment of anxiety disorders.

Physiological and Emotional Responses of Disabled Children to Therapeutic Clowns: A Pilot Study

Shauna Kingsnorth

2011

Abstract

This pilot study examined the effects of Therapeutic Clowning on inpatients in a pediatric rehabilitation hospital.

Studies of therapeutic clowning have shown that this intervention facilitates verbal and nonverbal communication improves mood and attitude; increases expressions of emotion such as laughter, joy and humor; supports empowerment and active role-reversal, and is perceived as a valuable complementary therapy by patients, families and care providers. While these results are encouraging, they must be interpreted with caution due to the limitations of their predominantly qualitative or evaluative study designs. Studies using experimental designs with children have focused exclusively on the effectiveness of goal-directed clowning to distract from pain and stress before or during invasive medical procedures

Effect of Regular Circus Physical Exercises on Lymphocytes in Overweight Children

Cesar Miguel Momesso dos Santos, Fábio Takeo Sato, Maria Fernanda Cury-Boaventura, Silvia Helena Guirado-Rodrigues, Kim Guimaraes Caçula, Cristiane Cassoni Gonçalves Santos, Elaine Hatanaka, Heloisa Helena de Oliveira, Vinicius Coneglian Santos, Gilson Murata, Cristina Neves Borges-Silva, Sandro Massao Hirabara, Tania Cristina Pithon-Curi, Renata Gorjão

2015

Abstract

Obesity associated with a sedentary lifestyle can lead to changes in the immune system balance resulting in the development of inflammatory diseases. The aim of this study was to compare lymphocyte activation mechanisms between overweight children practicing regular circus physical exercises with non-exercised children. The study comprised 60 pubescent children randomly divided into 4 groups: Overweight Children (OWC) (10.67 ± 0.22 years old), Overweight Exercised Children (OWE) (10.00 ± 0.41 years old), Eutrophic Children (EC) (11.00 ± 0.29 years old) and Eutrophic Exercised Children (EE) (10.60 ± 0.29 years old). OWE and EE groups practiced circus activities twice a week, for 4.3 ± 0.5 and 4.4 ± 0.5 months, respectively.

In conclusion, overweight children present an altered immune system characterized by high lymphocyte proliferation due to a decrease in T regulatory cell amount. These effects are evidenced by reduced IL-10 levels and IL-35 mRNA expression and associated with decreased expression of suppressor proteins (CD95 and CTLA-4), leading to the inhibition of lymphocyte activation and differentiation. Overweight children submitted to regularly practice circus activities presented an attenuation of the immune system imbalance, by reducing lymphocyte proliferation activity and by preventing some deleterious effects in lymphocytes. Therefore, we conclude that overweight children are more prone to develop impaired immune system function, which is partially prevented by a regular and moderate physical exercise program

Circus and Clowns: Creative approach for emotional and mental well-being: Learning from Clowns without Borders and Circus Cirkör

Daniel Wollin

1991

Abstract

The number of displaced people around the world today is unprecedented in world history, with a third of those displaced below the age of 18. These children often undergo traumatic experiences which can cause serious mental health issues before and during their flight as well as afterwards when resettling in a new country. In Sweden, they are offered psychological aid in order to better deal with these issues and hence recover. However, due to the cultural stigma attached to mental health problems, psychosocial aid is often ruled out by the child themselves. In addition, up to 30% of these unaccompanied children have been reported to suffer from PTSD, where merely speaking about one's issue can trigger a relapse of the trauma. There is therefore a shortage of pragmatic approaches to help tackle the challenges that these children faces.

The aim of this thesis is to investigate how creative programs such as the organisation Clowns without Borders works with unaccompanied refugees and how their methods affect the wellbeing of these children. This thesis explores the effects that laughter and playing has on a child's well-being using a qualitative field research approach.

The research is a contribution to the field of development since it offers new grounds on how to work towards increasing the living standards of resettled displaced persons.

Circoanalysis: Circus, Therapy and Psychoanalysis

John-Paul Zaccarini

2013

Abstract

There is an object/artefact of circus and a subject/process that makes it. This research considers the subject of the circus-making in order to bring it to the foreground of future discussions about pedagogy, practice and production. If the shift from Traditional to New Circus brought with it changes in education – the incorporation of theatre and dance – then the emerging Contemporary Circus may need a more refined set of tools to facilitate its creative growth. This thesis sets out how psychoanalytic theories can be adapted and its key practices adopted to bring about this shift from New to Contemporary Circus in pedagogic practice.

The practice tends to the subject that is traditionally mute in the face of the demands of circus, to which it complies becoming an object with minimal agency. Psychoanalytic praxis is adapted to give the subject a voice in order to develop a methodology specific to circus; circoanalysis. Following Freud it starts with the analogy of the circus act and the dream, the proposition that both are productions of the unconscious and contain hidden meanings and desires disguised by the formal content. It continues with the analogy of the symptom, which must be repeated for the partial and ambiguous satisfaction of unconscious desire and is at the threshold of the somatic and the psychic. Winnicott's theory of play is utilised to examine how artists explore and work through certain aspects of anxiety provoking psychic content in their work. Anxiety, in its Lacanian formulation, present in both circus and the consulting room, provides the key to understanding the importance of the Other in the act. Circus, like psychoanalysis, needs its other to recount its story to. Over one hundred research participants, students and professionals, engaged in the practices of questionnaires, focus groups, consultations, interviews and extended periods of circotherapy.

The thesis describes the development of a technique of talking through the manifest, formal content of the circus act in order to get to the unconscious desires that create it. The act is then seen as a symbolic compromise formation enveloping a kernel of real *jouissance*. In a series of case studies hysteria, obsessive neurosis, masochism, paranoid fantasy and melancholia are seen both as a series of subject positions with regard to circus and its spectator and as ways of managing an excessive enjoyment. Circus is put into a new context as a healing practice for its practitioners, whether in the form of repetition compulsion that turns bad objects into good ones or as a homeopathic self-immunisation against pain, anxiety and the relation to the Other. It casts new light on the problematic the circus has with the theatrical performance tropes of character and narrative which emerge as disavowals of this latent content and relation to the Other and suggests that a move forward, beyond this Other of the circus, implies a certain form of mourning.

Self-Determination Through Circus Arts: Exploring Youth Development in a Novel Activity Context

Jennifer P. Agans, Jacqueline L. Davis, Spyridoula Vazou, Tal Jarus

2019

Abstract

The factors that make youth circus unique within physical activity settings may provide different affordances for the satisfaction of basic psychological needs than sport programs. For example, youth circus programs generally allow youth to explore a wide variety of activities (e.g., acrobatics, juggling, clowning, wire-walking, trapeze) and thus may support autonomy (e.g., McCutcheon, 2003) more than single-sport programs. In addition, because most youth have limited experience with circus, more explicit competence support is often provided in these programs (e.g., Heller & Tagliatela, 2018; Kiez, 2015) than might be offered in traditional sports. Finally, the collaboration and trust required to produce a circus (Cadwell, 2018) may further promote relatedness. Existing studies of youth circus cite a wide range of developmental benefits, including growth in perseverance, belonging, and self-esteem (Heller & Tagliatela, 2018; McCutcheon, 2003; Ott, 2005; Woodhead, 2002). These outcomes align with youth development outcomes such as grit (Duckworth, Peterson, Matthews, & Kelly, 2007) and the 5 Cs model of PYD, which focuses on Competence, Confidence, Caring, Character, and Connection (Lerner et al., 2012).

Circus Arts Therapy® fitness and play therapy program shows positive clinical results

Carrie Heller, Lauren A. Tagliatela

2018

Abstract

The goals of this article include introducing Circus Arts Therapy fitness and play therapy program, designed for children ages 4–17, which combines both directed structured activities with nondirective approaches implemented within a circus-based context (e.g., juggling, trapeze, tight wire), and to evaluate the physical and emotional benefits of participating in this type of therapy. Parental report data were collected about 15 children who participated in two 8-week sessions of the program, and results indicate significant benefits in physicality, ability to function as a team, and ability to follow directions. As one of the first studies to empirically evaluate the efficacy of circus arts as a therapeutic tool, these results are encouraging and speak to the need for additional more broad-based evaluations.

Occupational therapy and circus: Potential partners in enhancing the health and well-being of today's youth

Jill Maglio, Carol McKinstry

2008

Abstract

The paper discusses the benefits of a project involving a community circus program developed for Victorian schools to assist in addressing students' needs for life skills acquisition in cooperation with the West Side Circus. The program demonstrated a connection between the core beliefs of community circus, education, occupational therapy and health promotion.

West Side Circus is a non-profit community circus organisation that works in partnership with the community to provide a variety of programs, workshops and performance opportunities for young people. It focuses on teaching, empowering and communication using circus as a medium. They concentrate on artistic expression and group solidarity.

The project found that the 'Circus in Schools' program in addition to qualitative perspectives of the students and school representatives, had the following positive benefits:

1. Provides a fun, motivating and intrinsically reinforcing experience.
2. Increases positive risk taking both physically and emotionally, in a safe and supported environment.
3. Promotes physical health and body awareness through activity.
4. Enables participants to acquire a broadened skill base relating to circus as well as more generic 'life skills'.
5. Increases self-confidence and self-efficacy.
6. Improves social connectedness, teamwork, and leadership skills within the group.
7. Provides opportunities for calming rhythmic activities, increased sensory feedback, a focus on balance, and coordination.
8. Creates a space in which participants feel a sense of belonging.

Behavioral Impact of Unisensory and Multisensory Audio-Tactile Events: Pros and Cons for Interlimb Coordination in Juggling

Gregory Zelic, Denis Mottet, Julien Lagarde

2012

Abstract

Recent behavioral neuroscience research revealed that elementary reactive behavior can be improved in the case of cross-modal sensory interactions thanks to underlying multisensory integration mechanisms. Can this benefit be generalized to an ongoing coordination of movements under severe physical constraints? We choose a juggling task to examine this question. A central issue well-known in juggling lies in establishing and maintaining a specific temporal coordination among balls, hands, eyes and posture. Here, we tested whether providing additional timing information about the balls and hands motions by using external sound and tactile periodic stimulations, the later presented at the wrists, improved the behavior of jugglers. One specific combination of auditory and tactile metronome led to a decrease of the spatiotemporal variability of the juggler's performance: a simple sound associated to left and right tactile cues presented antiphase to each other, which corresponded to the temporal pattern of hands movement in the juggling task. A contrario, no improvements were obtained in the case of other auditory and tactile combinations. We even found a degraded performance when tactile events were presented alone. The nervous system thus appears able to integrate in efficient way environmental information brought by different sensory modalities, but only if the information specified matches specific features of the coordination pattern. We discuss the possible implications of these results for the understanding of the neuronal integration process implied in audio-tactile interaction in the context of complex voluntary movement, and considering the well-known gating effect of movement on vibrotactile perception.

Changes in gray matter induced by learning - revisited

Driemeyer J., Boyke J., Gaser C., Büchel C., May A.

2008

Abstract

Recently, activation-dependant structural brain plasticity in humans has been demonstrated in adults after three months of training a visio-motor skill. Learning three-ball cascade juggling was associated with a transient and highly selective increase in brain gray matter in the occipito-temporal cortex comprising the motion sensitive area hMT/V5 bilaterally. However, the exact time-scale of usage-dependant structural changes occur is still unknown. A better understanding of the temporal parameters may help to elucidate to what extent this type of cortical plasticity contributes to fast adapting cortical processes that may be relevant to learning. **PRINCIPAL FINDINGS:** Using a 3 Tesla scanner and monitoring whole brain structure we repeated and extended our original study in 20 healthy adult volunteers, focussing on the temporal aspects of the structural changes and investigated whether these changes are performance or exercise dependant. The data confirmed our earlier observation using a mean effects analysis and in addition showed that learning to juggle can alter gray matter in the occipito-temporal cortex as early as after 7 days of training. Neither performance nor exercise alone could explain these changes. **CONCLUSION:** We suggest that the qualitative change (i.e. learning of a new task) is more critical for the brain to change its structure than continued training of an already-learned task.

Training-induced brain structure changes in the elderly

Neurosci J., Boyke J., Driemeyer J., Gaser C., Büchel C., May A.

2008

Abstract

It has been suggested that learning is associated with a transient and highly selective increase in brain gray matter in healthy young volunteers. It is not clear whether and to what extent the aging brain is still able to exhibit such structural plasticity. We built on our original study, now focusing on healthy senior citizens. We observed that elderly persons were able to learn three-ball cascade juggling, but with less proficiency compared with 20-year-old adolescents. Similar to the young group, gray-matter changes in the older brain related to skill acquisition were observed in area hMT/V5 (middle temporal area of the visual cortex). In addition, elderly volunteers who learned to juggle showed transient increases in gray matter in the hippocampus on the left side and in the nucleus accumbens bilaterally.

The psychological benefits of Circus Skills Training (CST) in schoolchildren

Nick Neave, Angie Johnson, Karen Mckenzie, Kathryn Whelan

2019

Abstract

Physical exercise can enhance various aspects of character and education, but children may not engage due to a variety of barriers. Circus Skills Training (CST) is a novel approach to encourage participation in exercise and develop physical literacy. It delivers circus skills in a positive, non-competitive and supportive social atmosphere, making it particularly appealing to those who avoid traditional competitive team sports. In a between-subjects design we compared 2 groups of children (aged 9-12) on various measures of physical and psychological wellbeing at baseline, and again after one group had received 6 months of CST training as part of their school's physical education classes. Significant differences between CST and none-CST children were found for teacher ratings of emotional problems, with the CST-group showing fewer such problems. CST could offer an innovative means of encouraging children to engage with exercise and provide wider benefits in terms of psychological wellbeing.

Falling together: an examination of trust-building in youth and social circus training

Stephen J. Cadwell

2018

Abstract

In 2013, David Mason, the director of the Mini Mobile Circus for Children in Afghanistan wrote 'It seems the value and joy of educational entertainment is not fully appreciated and understood, especially in the academic world'. This article attempts to support the claim that youth and social circus can affect young people in an extraordinary way. The multifaceted nature of circus reveals it to be an art form that it is adaptable to almost any situation or any kind of participant. Whether it is young performers in Ireland, people with learning difficulties in Finland, or displaced children in Afghanistan, circus is being used as an empowering and educational form of entertainment with extremely positive results. Some causes for those effects are proposed and in doing so, an insight into the nature of youth and social circus training is offered.

The Development of the Features of Positive Youth Development among Youth Who Are Practicing Circus Art at Fekat Circus Club in Addis Ababa

Abaynesh Biru

2019

Abstract

This study has explored the development of the features of Positive Youth Development (PYD) which are the Five Cs (Caring, Character, Connection, Competence and Confidence) among youth at Fekat Circus Club in Addis Ababa, Ethiopia. A total of 35 participants of whom 24 were permanently practicing circus and 11 trainees who were under training took part in the study. The research used a mixed method design to examine the real life contextual understandings regarding the circus art and the development of the features of PYD at Fekat Circus Club. The quantitative data was collected using the short version of the measurement scale of Positive Youth Development developed by John Gheldof (2014) based on the original measuring scale developed by Lerner, (2005), whereas the qualitative data was collected through interviews with those who were managing the club, trainers, trainees, and technical advisor. The responses from all interviewees supported the result from the quantitative data that development of the features of PYD were significant among youth who were practicing circus art. Results showed that participants of the study had highest means in all the Five Cs and respondents confirmed that the features of PYD were manifested on themselves and friends. It is recommended that it will be important to exert efforts to raise the level of awareness of the community, government bodies and other stakeholders to consider circus art as a tool to PYD so that it can get the necessary support and input to grow and serve the youth population.

Want to make circus even more fun? Follow the principles of self determination theory!

Dr Fleur Van Rens

2020

Abstract

Self-determination theory (Ryan & Deci, 2010) suggests that people are more likely to enjoy an activity (and stick with it) when participation in this activity fulfils three key psychological needs. These three psychological needs are the need for autonomy, relatedness and competence. This study explains how people can use the principles of self-determination theory to increase students' enjoyment in circus classes.

Research suggests that autonomy is highly predictive of people's enjoyment of an activity (Vansteenkiste et al., 2004). The study presents three options to increase autonomy while practicing circus skills. Relatedness, refers to feeling part of a community, and creating friendships with other people in the circus. Practising juggling excels in fostering feelings of relatedness. Competence, refers to feeling like you're successful in what you're doing. As a guideline, research suggests that 80 to 90

percent of feedback to students should be positive. Further, when you provide instructive feedback, make sure that you also reward the student for following your feedback.

Social circus program (Cirque du Soleil) promoting social participation of young people living with physical disabilities in transition to adulthood: a qualitative pilot study

Frédéric Loiselle, Annie Rochette, Sylvie Tétreault, Michel Lafortune, Josée Bastien

2018

Abstract

Purpose: To explore the perceived impact of a social circus program on the participation level of young adults' living with physical disabilities from their own and their parents' perspective.

Method: Exploratory phenomenological qualitative design. A social circus program was offered for nine months. Perceived participation level was documented through pre and post semi-structured interviews. A pretested interview guide was used. Interviews were transcribed and coded by two independent researchers.

Results: The average age of the participants ($n = 9$) was 20.0 ± 1.4 years with 2/9 being female. Participation was perceived as being improved after the intervention from both perspectives (participants and parents) mainly for communication, mobility, relationships, community life and responsibilities. The intervention was perceived as strengthening self-perception and self-efficacy, which in turn enhanced participation level and decreased parents' bounding.

Conclusion: The results show promises for social circus as a new approach in adult physical rehabilitation for this population in transition.

Circus as a healing art: What polyvagal theory teaches us about why circus works

Lacy Alana

2019

Abstract

If you're involved in the circus world, you've likely heard people talk about the healing power of circus, whether they're casually joking about circus being "their therapy," or reflecting on the transformative impact they've seen circus have on their students in a social circus setting.

This article is the first installment in a series that explores simplified interpersonal neurobiology that gives us a concrete way of understanding why circus works.

Social and emotional learning in American Youth **Social Circus Program**

Jen Agans, Zoe Brooks

2017

Abstract

Some key results from the AYCO Social and Emotional Learning study include:

-With regard to program quality across the Network, results show that AYCO Social Circus Network programs are comparable to exemplary SEL programs with regard to the quality of their horizontal (staff-to-staff) communication.

-AYCO Social Circus Network programs performed comparably (or better than) exemplary SEL programs, and better than the general sample of youth programs on measures of instructional practice (including challenging curriculum, responsive instruction, and youth engagement). These results show that AYCO Social Circus Network are implementing challenging curriculum and responsive instruction, and engaging youth participants.

-With regard to youth outcomes, at baseline, social circus youth looked similar to youth enrolled in the exemplary SEL programs and general youth programs with regard to their SEL skills (emotion knowledge, behaviorally managing emotion, contribution to the group, and goal pursuit skills). This is helpful because it means the youth in all these programs started out similar to each other before participating in their respective programs. Then, at post-test, youth in Social Circus Network programs and exemplary SEL programs generally had similarly high levels of SEL skills, typically higher than those of youth in general programs.

-Within the Network sample, researchers categorized the youth into six groups who differed in their baseline levels of SEL skills. The lowest scoring groups, those who struggled to demonstrate SEL skills, made up 53% of the sample across the Network. When this categorization was repeated with the post-test data, collected at the end of the programs, only 19% of youth in the Network sample were categorized as struggling with SEL skills, and 46% demonstrated well-developed SEL skills.

-Network programs' impact on older youth (ages 12-18) was even larger than the impact of exemplary SEL programs' impact on teens with regard to emotion knowledge and goal pursuit.

-The report states that "given this pattern of results, AYCO Social Circus Network programs appear to be achieving their social purpose by designing and delivering a circus arts curriculum model that combines high challenge and high support – best practices in the field of youth development."

-The report also states that "AYCO Social Circus Network offerings were of exceptionally high quality and produced substantively important SEL skill change in youth, comparing favorably to an external sample of exemplary programs with long histories of SEL work and validation."

-AYCO programs outperformed programs in a general sample. This pattern of results indicates that ACYO Social Circus Network programs have a positive impact on the SEL skills of participating youth.

Not just clowning around: Investigating psychological mechanisms underlying accidents in a heterogeneous group of contemporary circus artists

Fleur E. C. A. van Rens, Edson Filho

2019

Abstract

Safety is paramount to nurture artists' creative growth and performance. In several contemporary circus arts disciplines, the consequences of accidents may involve severe injuries or death. In this article, we explore perceived risks, personality, experiences of sensation, emotion regulation, and agency in relation to accidents and near misses in contemporary circus arts ($N = 248$). A pathway analysis revealed that perceived risk, personality, and emotion regulation covary and together affect the likelihood of accidents and near misses in contemporary circus arts. A multivariate analysis of variance showed that contemporary circus arts consist of a heterogeneous group of discipline categories. Floor acrobats experienced significantly more accidents than aerial acrobats and object manipulators, and aerial acrobats experienced significantly more emotion regulation and agency than object manipulators. Further, aerial acrobats scored significantly higher on the personality traits conscientiousness and agreeableness than object manipulators. Our study reinforces the centrality of emotion regulation to safe performance in contemporary circus arts. Practitioners in performing arts, and circus in particular, are recommended to tailor safety interventions to the circus category and the artists' personality-specific needs. (PsycINFO Database Record (c) 2019 APA, all rights reserved)

What does this mean?

First, our results confirmed the expectation that conscientiousness, emotion regulation, and perceived risk are predictors of accidents and near misses. Experiences of sensation (i.e., chasing an adrenaline rush) did not predict this, neither were there differences between circus disciplines on experiences of sensation. Second, the findings suggest that we cannot simply group all circus artists together in scientific research. Instead, we need to start investigating differences between circus disciplines to better understand the costs, demands, and benefits of the different contemporary circus disciplines. Finally, the findings emphasise that it is important to focus on floor acrobats when it comes to accident prevention. This may also have implications for research investigating acute and chronic injuries among circus artists.

Under the big top: An exploratory analysis of psychological factors influencing circus performers

Alexandra Ross, Jamie Shapiro

2017

Abstract

Results showed that mental skills such as confidence, concentration, energy management, and emotional management are considered integral to success in circus arts. Results also reflected differences that exist between circus and sport domains, such as the ability to embody emotions and connect with the audience. Future research should explore phenomena more systematically as well as continue to examine the differences that exist between circus arts and other performance domains.

This study was designed to be an exploratory investigation of the mental challenges faced by circus performers as well as mental strengths that contribute to performance excellence.

Gaze fixation improves the stability of expert juggling

Joost C. Dessing, Frédéric P. Rey, Peter J. Bee

2011

Abstract

Novice and expert jugglers employ different visuomotor strategies: whereas novices look at the balls around their zeniths, experts tend to fixate their gaze at a central location within the pattern (so-called gaze-through). A gaze-through strategy may reflect visuomotor parsimony, i.e., the use of simpler visuomotor (oculomotor and/or attentional) strategies as afforded by superior tossing accuracy and error corrections. In addition, the more stable gaze during a gaze-through strategy may result in more accurate movement planning by providing a stable base for gaze-centered neural coding of ball motion and movement plans or for shifts in attention. To determine whether a stable gaze might indeed have such beneficial effects on juggling, we examined juggling variability during 3-ball cascade juggling with and without constrained gaze fixation (at various depths) in expert performers ($n = 5$). Novice jugglers were included ($n = 5$) for comparison, even though our predictions pertained specifically to expert juggling. We indeed observed that experts, but not novices, juggled significantly less variable when fixating, compared to unconstrained viewing. Thus, while visuomotor parsimony might still contribute to the emergence of a gaze-through strategy, this study highlights an additional role for improved movement planning. This role may be engendered by gaze-centered coding and/or attentional control mechanisms in the brain.

Circus works!

Zoe Brooks, Trenton Circus Squad

2015

Abstract

A case for using circus arts as a tool for social change across the US, dedicated people engage in the difficult work of improving lives. Some are building hope and harmony in shattered communities like Ferguson, MO. Others work to help address systematic oppression and body image challenges for women, girls, and transgender people. Some work with youth whose lives have been disrupted by trauma, helping to build self-esteem, connection, and confidence. Therapists help those with physical or emotional challenges to meet their occupational therapy, physical therapy, and individual education plan goals. The list of examples reaches into every realm of social change. The common thread? These people are harnessing the power of circus arts to accelerate social change. Why? Because circus works. "Social circus" offers a unique combination of characteristics for positive, creative youth and community development.

A 2017 study of eight social circuses showed that these programs have as good or better impact on social and emotional learning among youth participants than other youth programs. Here's why: Circus arts promotes physical and mental health and wellness.

Circus represents not one physical or artistic discipline, but the practice of creating wonder with the human body. Students of circus learn a multitude of physically expressive skills: juggling promotes cross-body and hand-eye coordination; unicycling and wire walking promote core strength and balancing skills; acrobatics and aerials foster strength and motor control.

Circus offers a range of fun new things to try, and presents fascinating, adaptable challenges for everyone, so that people with many different body types and physical abilities are drawn to a sustainable, varied physical practice, key to physical literacy. The central aspect of playfulness in circus not only makes it appealing and accessible, but contributes to cognitive, emotional, and physical development. Circus, partnered with occupational, physical and other health therapies, can accelerate progress toward specific therapeutic goals for individuals with disabilities.

Children who train in the circus can become physically confident, healthy, capable adults who understand the capabilities and limits of their bodies. Circus arts fosters human connection and belonging

Circus feeds the basic human need for love and belonging. Circus performers must rely on connections with both trusted adults and their peers to keep them safe and physically and emotionally supported through challenging assignments.

Forecasting the Social Return on Investment Associated with Children's Participation in Circus-Arts Training on their Mental Health and Well-Being

Richard McGrath, Kristen Stevens

2019

Abstract

The early and middle years of childhood are recognised as being pivotal in ensuring positive cognitive development throughout life, resulting in healthier societies. Healthier societies can mean a reduction in lifestyle related illness and therefore potentially reduce reliance on healthcare resources. The purpose of this study was to forecast the Social Return on Investment (SROI) associated with children's participation in a circus-arts program on their mental health and well-being. A mixed method approach was adopted for this study. Key stakeholders were children aged between 9 and 14 years. Children were surveyed ($n = 23$) and participated in focus group ($n = 55$) interviews, prior to and after, six months of circus-arts training. The questionnaire used was the internationally validated KIDSCREEN-27. Focus group interviews asked children their beliefs about how circus made them feel and benefits of participating in circus-arts training. Results from the pre/post survey indicated some positive improvements occurred concerning children's self-perceptions of personal health, though not statistically significant. Focus group results indicated positive impacts for children's mental wellbeing, socialisation skills, physical enjoyment and resilience. The SROI analysis found that for every one dollar invested, \$7 of social return may be generated due to participation in a circus-arts program. Improvement occurred across four key areas concerning children's mental health and well-being; stress relief, self-esteem, confidence and socialisation. Findings from this study indicate the value of investment in the performing arts, highlighting the importance the circus-arts for children's mental health. Associated impacts to improving children's self-esteem, confidence along with relieving stress are identified as decreasing the potential costs of treating associated illnesses: such as depression and anxiety. Improvements in socialisation have been linked to costs associated to social dysfunction: such as crime and incarceration.