**UConn CSCH Podcast Transcript: The potential impact of sport and physical activity on youth living in poverty**

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**Helene Marcy**: Hello and Welcome to the CSCH Podcast. My name is Helene Marcy, Program Manager for the UConn Collaboratory on School and Child Health, or CSCH. The CSCH mission is to facilitate innovative and impactful connections across research, policy, and practice arenas relevant to school and child health. I invite you to take a look at our website at csch.uconn.edu.

Today I am here with Jesse Mala. Jesse is a Visiting Assistant Professor in the Department of Educational Leadership in the Neag School of Education at UConn. He is part of the Sport Management program and his research looks at the role of physical activity and sports participation in fostering cognitive development, academic outcomes and stress regulation among youth in poverty.

We’re going to talk more specifically about his research looking at the relationship between physical activity and executive functions among youth living in poverty.

Jesse, welcome!

**Jesse Mala**: Hi Helene thank you for having me.

**Helene**: So to start with some general background, please tell us about what we already know about the effects of poverty on kids’ executive function skills and then what things that are known to help buffer those negative effects.

**Jesse**: So we know experiencing adversity like poverty during critical stages of development negatively impacts the development of the prefrontal cortex and its executive functions. It’s not just poverty in and of itself that negatively affects brain development and function, but it’s the cumulative exposure to environmental stressors that are associated with living in poverty, like the increased risk of exposure to violence, nutritional deprivation and exposure to substance abuse that actually impact the brain. But the brain displays plasticity and the resilience to overcome the effects of adversity on the brain. The brain has shown the ability to recover from previous trauma to optimal cognitive function through protective factors in the environment.

So, some things that can act as a buffer are nurturing environments. Nurturing the souls of children through positive parenting strategies, and the presence of caring adults.

We also think that physical activity can be a buffer, because various physical activities are strongly related to enhanced executive functions, but most of this research has been done on white, middle-class youth.

**Helene**: So you set out to study the effects of physical activity on executive function among youth living in poverty. Tell us a bit about your study and how it was structured.

**Jesse**: Well, in order to get a large enough sample size, we relied on the partnerships that we have with two schools in the Central Connecticut area, and one school in Phoenix AZ. Over 92% of the students participating in this study were currently living in urban poverty. Overall, we had 149 students who agreed to be participants in the study, with 78 from Connecticut, and 71 from Arizona.

The data for this study were gathered in two visits, mainly. In visit one, they took three executive functions tests on an iPad, which included the Flanker task, which measures inhibition, the Dimensional Change Card Sort Test, which measures cognitive flexibility, and the List sorting working memory test which measures working memory.

In the second visit, in groups of two to three participants they completed the Physical Activity Questionnaire by paper and pencil under my guidance.

The Physical Activity Questionnaire is a validated self-report measure of physical activity and includes questions about activities in spare time, in PE, recess, lunch, after school, evening, weekend, and free time and also asks about the frequency and intensity of activities.

**Helene**: So tell us about what you found.

**Jesse**: We found a statistically significant relationship between physical activity levels and the cognitive flexibility test, but only a small correlation, and no significant correlations between the physical activity scores and the inhibition and working memory tests.

We thought that perhaps physical activity as assessed from the questionnaire would improve prediction of inhibition, cognitive flexibility, and working memory scores, over and above school district, sex, and maturation, but it didn’t.

However, we ran another analysis to assess any differences in executive functions between active and inactive participants and found that youth who participated in more physical activities had greater working memory than those who participated in fewer activities, but didn’t display greater inhibition and cognitive flexibility.

**Helene**: Can you tell us a bit more about what working memory is?

**Jesse**: Sure. Working memory refers to our ability to work with information that is not visually present before us. Mental math is a great example of working memory. In the context of sport and a little shout out to the lack of our college football season this year, it’s our ability to remember a specific play within a playbook, without looking at the playbook, and our responsibilities when that play is called during an actual game. This is working memory in action.

**Helene**: So tell us about the implications of this research and why you think the results are important.

**Jesse**: The results of our study are important, because our participants were all non white, primarily black, and Latinx. And the majority of our students—over 92%—lived in poverty.

And the novel findings in this study suggest a small positive relationship between physical activity and cognitive flexibility and that greater physical activity participation is associated with greater working memory among youth currently living in poverty.

These findings are significant, as greater executive functions among youth in poverty may not only lead to enhanced cognitive function, but also may lead to improved school readiness, greater math and reading skills, and school success.

The findings do provide the basis for future research to use randomized controlled trials to assess if physical activity can significantly improve executive functions among youth in poverty. Further research examining this phenomenon among these specific demographic groups is needed due to the positive social and economic implications involved with improved academic achievement and its relationship

to higher rates of employment and higher median incomes among young adults.

**Helene**: So I understand you’ve recently completed research on another related project that looks at the positive impact of sport-based youth development programs. Can you give us a snapshot of that project?

**Jesse**: Absolutely. We developed and implemented a sport-based youth development intervention for predominantly Latino and Black boys in a high poverty school in Connecticut. We used a mixed method quasi-experimental design with a control group to study its potential effects on school climate. Participants engaged in two 45-minute sport-based leadership sessions each week for a total of 20 weeks, where we intentionally taught authentic leadership skills and other posiive life skills through sport to the youth. An important aspect of this intervention was our daily discussions, where we, as the coaches of this intervention, facilitated a discussion among participants regarding the skills learned from the day and how to apply them in the classroom and within the community. We administered a school climate survey before the start of the program and after program completion. We also conducted focus groups at the end of the year and found that the program had a significant effect on increasing student perceptions of school climate, compared to the control group. Specifically, the surveys and focus groups revealed improved student perceptions of school connectedness, and fostered social skills learning, which can positively impact student outcomes. The results were relevant to this school since it was reported by the school administration that the majority of participants prior to the intervention had negative relationships with adults in the schools, but after participating in this program their connections to school improved. Again, highlighting the positive impact that sport can have among youth.

**Helene**: That’s very hopeful news. What would you say are the main takeaways from both studies?

**Jesse:** Well, when designed and managed properly, sport and physical activity can be used to improve cognitive and academic related outcomes among youth in poverty. But I can’t stress enough that to achieve the positive cognitive, and school related outcomes through sport and physical activity, it is not just a matter of increasing recess time, or “free-time” to run around. Sport and physical activities have to be intentionally designed for youth to learn and practice life skills. They must have a positive, supportive environment among the adults and peers involved. And have the appropriate level of physical intensity in order to have the most optimal outcomes.

**Helene:**  Jesse, tell us how listeners can keep up to date on the progress of your research projects?

**Jesse**: You could just follow me on Linkedin, just Jesse Mala, or on Twitter. My handle is @DrBueno\_notMala, for those Spanish speakers out there.

**Helene**: That's a great Twitter handle. I have to say.

<laugh>

I look forward to following your research—this is important work. Thank you so much for joining us today and telling about your two projects.

**Jesse:** Thanks so much for having me,

**Helene**: A reminder to our listeners that you can find information about Jesse Mala and all of our affiliates at the CSCH website, csch.uconn.edu. You can also follow us on social media @UConnCSCH.

Thanks for listening.

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