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Series: Spotlight on Evidence Synthesis Program

Session: Adaptive Sports for Veterans: A Systematic Review of the Evidence

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Heidi: I would like to introduce our presenters for today. Our presenter, our main presenter today is Dr. Nancy Greer, she is with the Evidence Synthesis Program Manager and Center for Chronic Disease Outcomes Research, with the Minneapolis VA Health Care System. And she is joined by operational partner discussants Dr. Joel Scholten, the National Director of Physical Medicine and Rehabilitation for VHA, and Dr. Leif Nelson, the Director of the National Veteran Sports Programs and Special Events. Nancy, we do have the correct screen up here, but I just need you to switch your display settings at the top of the screen. Which you use that pulldown. Yep, right there. And you just swap presenter view and slideshow. Perfect. We’re seeing what we want to see. I will turn things over to you.

Dr. Nancy Greer: Okay, great, thank you. Well, this is Nancy Greer, and just a correction, we are now known as the Center for Care Delivery and Outcomes Research, as noted here. We’ve kept the same letters but changed the name slightly. I’d like to thank Leif, and for inviting me to present our work today, and thanks to the, Heidi and others who’ve been involved in organizing the presentation.

I’d like to first off acknowledge my co-authors/collaborators on this project. On the left side here, a number of people from the Minneapolis VA Medical Center. The topic was nominated by Leif Nelson, Joel Scholten, Lucille Beck, and David Chandler, to the ESP program, they invited, they nominated the topics. And then we also had a technical expert panel of individuals involved, helping us to guide our work.

By way of disclosure, a lot of words here, basically no investigators have any affiliations or financial involvement that conflict with the material presented today. Or in the reports.

Many of you are familiar with the VA Evidence Synthesis Program. It is sponsored by VA Health Services Research and Development. And the goal is to provide timely and accurate syntheses/reviews of healthcare topics identified by clinicians, managers, policy makers, as they work to improve the health and healthcare of Veterans.

We are based, there are four ESP centers, Minneapolis is one of them, the others are in Portland, Oregon, Los Angeles, and Durham. And then a coordinating center in Portland.

And importantly, we have, as it says down here, a broad topic nomination process. If you have a topic or a question that you’re interested in having the evidence reviewed and synthesized, you are welcome to nominate a topic through the link here on this slide.

So, this particular report, again, adaptive sports for disabled Veterans, we finished this in March of 2019. It says here that the full-length report is available on the website, it is currently available on the VA Intranet, we are in the process of developing a publication, and for a manuscript for a journal, and so they, it’s preferred that we do not post it publicly until the manuscript is hopefully accepted. So the, if you have access to the VA Intranet the report is available there.

I guess, do we have the poll questions, Heidi? [Silence 03:41-03:55] Well, we had a, hoped to have, get some input from the audience, but maybe that has not happened. So we were interested in your primary [unintelligible 04:03]

Heidi: Sorry, sorry, Nancy, Nancy, Nancy, I’m sorry, I do have the poll question up, responses are coming in. The question here is what is your\_

Dr. Nancy Greer: Oh, okay, I’m sorry.

Heidi: \_primary, the question here, what is your\_

Dr. Nancy Greer: [Unintelligible 04:11]

Heidi: \_primary, okay, Nancy, let me just read through the question here. What is your primary role in VA related to adaptive sports? Select all that apply. The options are clinician, therapist, for example, physical therapy, recreational therapy, researcher or administrator, athlete, or other. And responses are starting to slow down, I’ll give this just another moment or two and I’ll close things out and we’ll go through the results. Okay, it looks like we’ve slowed down here so I’m going to close this. And what we’re seeing is 23% of the audience saying clinician, 77% saying therapist, 2% researcher or administrator, 1% athlete, and 5% other. Thank you everyone.

Dr. Nancy Greer: Yeah, thank you. And then we have a second question.

Heidi: I’m sorry, your second poll question is right now?

Dr. Nancy Greer: It was a question about how long people have been involved with adaptive sports.

Heidi: There we go. How long have you been involved with adapted sports in any role? More than 10 years, 1 to 10 years, less than 1 year, or no direct involvement in adaptive sports. Again, we’ll give everyone a few moments to respond before we close the poll out. And that looks like we’re slowing down here so I’m going to close this. And what we’re seeing is 26% saying more than 10 years, 45% saying 1 to 10 years, 11% less than 1 year, and 18% no direct involvement in adaptive sports. Thank you everyone.

Dr. Nancy Greer: All right, thank you. So it looks like we’re primarily clinicians with, and the majority have a good number of years of experience with adaptive sports. So, but coming back to our review, the first thing we wanted to do was come up with a definition of adaptive sports. And that wasn’t quite as easy as one might think. But we’ve chose to use the definition that was in the Federal Register in 2014. A sport that has either been adapted specifically for persons with a disability or crated specifically for persons with a disability. You may be aware that organized adaptive sports began in the early 1900s, a lot of the early work, opportunities were in skiing, and then the opportunities expanded in post-World War II era, particularly in regard to rehabilitation of World War II Veterans.

Many of you are probably aware of the Department of Veterans Affairs National Veterans Sports Programs and Special Events. And their office, it offers programs to provide opportunities for Veterans to improve their independence, well-being, and quality of life through adaptive sports and therapeutic arts programs. They have a number of national events. The National Wheelchair Games and so on. They also have a grants program, and they offer training grants for Veterans training for Paralympic and Olympic sports.

With input from our topic nominators and our TEP members, we developed the following questions for our review. The first one is, what is the effectiveness of participation in adaptive sports programs among individuals with ALS, limb amputation, hearing loss or deafness, multiple sclerosis, PTSD, spinal cord disorder, spinal cord injury, stroke or cerebrovascular accident, TBI, or visual impairment or blindness? And so those conditions were conditions that the nominators and the TEP agreed that were the sports, excuse me, the medical conditions of interest. And then a sub questionnaire was, does the effectiveness vary by frequency or duration of adaptive sports program participation? And then a second question, do particular patient groups, age, gender, race, time since injury, and so, benefit more than others from adaptive sports participation?

We also had a question about harms. What are the potential harms of participation in adaptive sports programs? And a question about, question three, what are the known facilitators of and barriers to participation in adaptive sports programs?

We also focused on a set of activities, or sports, and this potential list of sports, quite a range of activities that the partners and the TEP members expressed that we should be, well the sports or activities that were of most interest to them.

The methods were somewhat, or generally standard systematic review methods. We identified or created key questions, and find the scope of the report with input from the partners, technical expert panel, and content experts from the Minneapolis VA. We searched multiple databases, we identified a large number of citations, so we did a single review of the titles, and that was followed by dual review of abstract and full text review of articles.

Our inclusion criteria for studies to include in our review were that the studies had to involve people 18 and older, they had to have one or more of the medical conditions of interest, they had to be about participation in one or more of the adaptive sports of interest and reporting and outcome of interest. I should also note that we included studies from any country, we did not limit our search to the United States, and we included both Veteran and non-Veterans studies.

As far as the exclusion criteria, we excluded studies that were about sports programs with modifications of equipment or environment based on age. We excluded individual fitness programs or sport activity that wasn’t one of the sports of interest. Similarly with medical conditions, we excluded if it didn’t have one of the conditions of interest. We excluded rehabilitation programs with no sports component. And we excluded studies of physical activity levels where the physical activity included items like household work, gardening, volunteering outside the home, and so on. And finally, human performance laboratory studies were excluded. So we weren’t looking at strictly strength, or VO2 max, or something like that.

Our data extraction, we identified different study designs, and the demographic data from the studies. And then the outcomes of interest were quite a broad range of things. Health and wellness outcomes, daily functioning, self-esteem perceived competence, community reintegration, including employment, mood, or quality of life, healthcare utilization, harms, and then the barriers and facilitators. Normally in systematic reviews there’s a lot of reviewing of risk of bias of the individual studies, and the overall quality of the evidence. We reviewed critical elements of the individual studies using criteria from the Joanna Briggs Institute. We did not do a formal assessment of overall quality of evidence because there was so much heterogeneity across the studies, in terms of the participants, the sports, the study design, the outcomes, and so on.

So this is a typical literature flowchart. We reviewed over 13,000 titles, we had, our searches generated over 13,000 titles of possible relevance. We’ve got through the title search we, or title review rather, that brought us down to 1600 abstracts. Applying our inclusion, exclusion criteria, that brought us down to 474 articles for full text review. And we included 118 articles that represented work of 114 different studies or trials. And here’s how the distribution across the three key questions. We did not include studies in our analysis of elite athletes. We chose to focus on populations that we thought were most relevant to the broader Veteran population.

For key question one, about effectiveness, we divided the studies into two categories, there were some, we won’t say issues, but there were some different, just some different points of view about our terminology. So let me just explain what we, how we divided them. We created what we call a set of, or we identified some articles as sports program studies. And these were adaptive sports programs with multiple session over a period of a few days or longer. And they typically assessed outcomes before and after participation. For example, a study of individuals with PTSD who participated in a three-day fly-fishing program. So they might have assessed their quality of life measures before the program, and then at the end of the program, and they were able to look and see whether the program had an effect. And then the other category of studies was what we called sports activity participation studies. And these are typically a one-time assessment of individuals who participate in organized adaptive sports. But the activity wasn’t specifically implemented for the purpose of determining whether participation provided benefits or harms. For example, a survey of participants in the National Veterans Wheelchair Games. It’s a one time, people are at the event, they give them some sort of a survey or questionnaire and ask about how they would rate their quality of life, or something like that.

So if we look first at the sports program studies, over here on the left column, adaptive sport, and then the number of studies. So, we look and see the majority of the studies are equine assisted activities and therapies. And these are the only sports that we found represented in the literature. We had that big table of sports, but these are the only sports that we did find represented in the literature. So of the 25, what we categorized as sports program studies, 11 were in equine activities, three in hiking/climbing, three in golf, and so on. And then across this row, this top row we have the medical condition, and again the number of studies. So the majority of studies involved people with either PTSD, or multiple sclerosis, and then five in stroke, and so on. Importantly, of the conditions of interest there were a large, a lot of the conditions there were no, we found no studies representing those conditions in the literature. And then, so the cross hatch here is there, of the 11 equine therapy studies four were in individuals with PTSD, five in individuals with multiple sclerosis, and two were in individuals with a stroke, history of stroke. And then the N represents the sample sizes. So you can see there were a fair number of small studies. It was one, one of these four studies had seven participants, one of these five studies had three participants, and so on. So generally, fairly small sample sizes in those studies.

What did the people in the studies, what kind of people were in the studies? Age, across the different studies, most studies were enrolling people 25 years and older, about half 25 to 50, and about half greater than 50. Gender, again, kind of a mix of male and female participants. And then most of the participants have been at least five years from the time, in most of the studies, rather, participants had been at least five years from the time of injury, or from their diagnosis.

The program durations ranged from 2 days to 45 weeks. There were six randomized controlled trials. Sample sizes, again, I mentioned that they were fairly small, so 17 of the 25 studies had fewer than 20 people. Or 20 or fewer people. And the studies were largely from the United States or Europe. Eight of the U.S. studies did enroll exclusively Veterans.

So what did we find? And from this presentation I’ve organized the information by the sport activity. In the report there is also information organized by the medical condition. So, for equine assisted activities and therapies there were 11 studies enrolling individuals with PTSD, MS, or stroke. In the PTSD populations the therapies were associated with improved mental health outcomes. And three of the four studies of this type enrolled exclusively U.S. Veterans. For individuals with multiple sclerosis, equine therapies may be associated with improved balance and reduced fatigue. And for individuals with a history of stroke, there was no association with the equine program, and health and wellness outcomes, and there was then little data on other outcomes. Overall, daily functioning, self-esteem, quality of life, and community integration were infrequently reported in this set of studies. In the hiking and climbing studies there, or category, rather, there were three studies all involving individuals with multiple sclerosis. And the programs were not associated with changes in health and wellness outcomes, including balance, fatigue, and cognitive function. So in other words, participating in the program did not result in differences for these outcomes, health/wellness outcomes, compared to people who were not participating in the program. And, or their, individuals’ health and wellness outcomes did not improve over the course of the program. Depending on whether there was a trial with a comparative group or just a pre, post study. And finally, daily functioning, self-esteem, and depression were only reported by one study. And no studies reported on quality of life and community integration.

Of the golf studies, all in individuals with stroke. There may be associated with improved balance. But again, very few of the outcomes of interest were reported. Fly fishing, and where there were two studies, all enrolling Veterans, U.S. Veterans with a history of post-traumatic stress disorder. And the fly-fishing program, participation of the fly-fishing program was associated with improvement in PTSD symptoms and other mental health outcomes. There was limited data, again, on many of the other outcomes of interest. And then for ski or snowboard program, wheelchair curling, surfing, and then a program that involved participation in multiple sports, it was all, each of these were only represented in one or two studies. But skiing and snowboarding, surfing, and participation in the multiple sports and those programs, did find some association with improved mental health symptoms. And there was limited data in, on other outcomes. The ski and snowboard program, and the surfing program did enroll U.S. Veterans.

As far as the sports activity participation studies, again, on the left column we have the adaptive sports that were represented. You can see the majority of these types of studies included people who participated in a variety of sports. And again, that would go along with what I mentioned earlier, a survey at the National Veterans Wheelchair Games would get people who were participating in a number of activities at those games. Otherwise, wheelchair rugby, wheelchair basketball. And as far as the medical conditions, again, the majority of studies here were in spinal cord injury, or vision impairment, or people with multiple conditions, amputations, PTSD, TBI, and so on. And again, a lot of the conditions of interest were not represented in these studies. The majority of studies then fall within the multiple sports, in individuals with spinal cord injury, and the sample sizes here are a little bit larger, which is what you’d expect, because it’s a lot easier to get a large sample size if you’re doing a survey or a questionnaire, as opposed to organizing a trial and having a pre, or a program rather, a multi-day program, and having people attend the program.

Excuse me while I take a little drink. All right, as far as the participants, and the majority of participants in these studies were between 25 and, or in the majority of studies the participants were between 25 and 49. A slightly higher representation of studies with a higher percentage of male participants. And again, a large number of the studies had, or the participants were at least 10 years from the time of injury or diagnosis.

These studies are mostly cross sectional. Some had a comparator group, something like people with the same condition who did not participate in the sports. Sample sizes, again as I mentioned, the somewhat larger sample sizes, more of the studies had over 100 people. And again, most of the studies were in the United States and Europe. For, there’s a, this is a error, and there’s actually three enrolling exclusive U.S. Veterans, and one was about 50% U.S. Veterans.

And so what did we find here of the, with grouping these other activities together, wheelchair basketball, wheelchair rugby, goal ball, cycling, and soccer? We found 10 studies in individuals with spinal cord injury, visual impairment, limb amputation, and multiple. No outcome was reported by more than one study, so it’s hard to make any kind of statements about the effectiveness of those programs. No study did report on employment. And then as far as the multiple sports outcomes, or multiple sports, rather, there were 20 studies. Among individuals with spinal cord injury participation was associated with greater self-esteem, self-efficacy, and athletic identity. And also a higher quality of life. There were less consistent findings for the mental health, community integration, and employment outcomes. In a study of individuals with visual impairment, participation in adapted sports was associated with better balance. Amongst people with multiple medical conditions participating in a variety of sports, participation was associated with higher quality of life. And then these studies, these multiple sports studies, there was limited reporting of the health and wellness or daily functioning outcomes. One thing I didn’t mention earlier was that one of our outcomes of interest was healthcare utilization. And no study, either the sports program studies or the sports activity participation studies reported on healthcare utilization. So whether participation in sports reduced or increased hospital visits, or that kind of thing.

As far as the questions related to the factors influencing effectiveness, we did not find a whole lot of reporting on this. Five sports activity participation studies reported on frequency and duration. And more frequent participation was associated with higher athletic identity and lower trait anxiety and depression scores. Among the demographic factors there were eight sports activity participation studies. Gender, there was, in four studies they were a higher athletic identity scores in male participants than in female participants. The time since injury, there was one study that showed similar athletic identity regardless of whether the vision was, whether the vision failed, whether it was a at birth or later on in life. And then the time and adaptive sports, higher self esteem in one study, increased employment rate in one study, was associated with more years of participation. And regarding time from injuries, level of injury or age, each of those factors was not associated with community integration scores. And that was, again, in one study.

As far as harms, again, looking at the different types of studies, the sports program studies, there were six studies, all of them also reported effectiveness outcomes. Sports represented similar to the overall equine activities, hiking/climbing, wheelchair curling. The conditions, multiple sclerosis, spinal cord injury, and PTSD or TBI. We excluded exacerbations of multiple sclerosis during participation because we did not, you could not attribute that exacerbation strictly to participation in the sports. If a program lasted for several months it could have been just a medical condition, not a, a medical factor, not a sport related factor. In the equine therapy articles, we found no adverse events in two studies. They were 5- or 10-week studies, and with a total enrollment of 56. There was one study that did report that 44% of the equine therapy and 27% of the standard care group experienced adverse events or serious adverse events of the 12-week study of individuals with multiple sclerosis. This study was better designed to monitor adverse events and so on. So it’s likely that some of their findings, the findings are attributed to the fact that they were better positioned to determine whether they were adverse events. Where on some of the other studies it was a more incidental reporting kind of thing. Hiking/climbing studies, a 45-week program of training and hiking reported that 33% had a minor medical event. A five-week indoor climbing program reported fatigue but no excessive fatigue. And a wheelchair curling program reported no adverse events.

In the sports activity participation studies, again, there were eight studies. Only one of these was also one of the effectiveness outcomes studies. So, they were studies that were more focused on harms associated with participation. Wheelchair basketball, wheelchair rugby, and so on. Conditions mostly is spinal cord injury, again, similar to our overall effectiveness set of studies. In the wheelchair sports there were, some studies had a comparator group, showing more rotator cuff injuries, in a study comparing overhead sports with no sports. One study reported some of the opposite, a lower percent with shoulder pain and delayed onset of pain, comparing wheelchair athletes participating in any sport versus non-athletes. And a third study showed a similar incident of rotator cuff injuries in wheelchair tennis and wheelchair archery participants. In studies with no comparator, injury requiring physician consultation in 29% of wheelchair rugby players, carpal tunnel syndrome in 67% of the wheelchair racing, and 52% of the wheelchair basketball participants. And shoulder pain since wheelchair use in 72% of wheelchair basketball participants. Power lifting, that, there is a mistake there, it’s 36%, 4 out of 11 experienced a lifting related injury during a 12-month training period.

As far as our key question about barriers and facilitators of participation. These studies were typically surveys, questionnaires, focus groups, interviews, and so on. We used the International Classification of Functioning and Disability Health framework from the World Health Organization. This is a framework for measuring interrelated factors of health and disability. The factors are grouped into different categories, or domains. Health conditions, body functions, body structures, activity, participation, environmental factors, and personal factors. And I’ve put a link to more information about the ICF framework.

I’m giving you a really an overview here. In our, in the full report we have a very detailed breakdown of these different categories. I thank a couple of my co-authors for really putting together the breakdown of the different ICF, and using the ICF model. As far as barriers to participation, we identified 25 studies. The conditions represented in those studies include spinal cord injury, limb amputation, and the next biggest category would be the mixed conditions. Sports, again, largely of multiple conditions, or multiple sports studies, rather, but some of the other individual sports as well. It’s the individual studies of individual sports. Whatever. Sorry. And the represented domains, body structure or function factors, poor physical health, poor fitness status, muscle tone dysfunction, fatigue, difficulty sleeping, unmet medical needs, physical pain. Those were all reported as barriers to participation. Related to the activity factors in the ICF framework, dependency on others, fear of becoming a burden to others, lack of a personal care assistant were all reported as barriers. Environmental factors, physical environmental factors, lack of information about sports opportunities, cost, travel, transportation, inaccessible facilities. And then social factors, lack of someone to participate with, feeling shame from others, issues with the group atmosphere, and so on. Or the highly competitive environment. So, some found that having too competitive of an environment was a barrier to participating. And then personal factors, advanced age, fear of pain or further injury, lack of time, and people who did not participate in a sport prior to their injury or diagnoses considered that to be a barrier to participation.

As far as facilitators and motivators, so we considered facilitators factors that contribute to their initial participation in adaptive sports, and motivators as factors that would contribute to continued participation. And more of these studies did deal with motivators. And we’ll get to that in a minute. The conditions represented, again, a lot of spina cord injury studies, or multiple conditions studies, and then, again, a range of sport activities. So some of the facilitators or motivators, the ability to have more independence, maintain your activities of daily living. Physical facilitators, having the right prosthetic device, physical setting, the atmosphere, accessibility, supportive and stress-free environment, safety measures in place, being able to participate in someplace where there are coaches, or there are people involved to make sure it was a safe environment. Social, meeting people, maintain a social contacts, interacting with others with similar disabilities, participating in society, support from friends and family, having exercise partners, being part of a team, improving communication skills, and availability of coaches. And personal factors, increased self-esteem and self-efficacy, improving/maintaining health and fitness, fun and enjoyment, being able to have, participate in new experiences, helping with acceptance of disability, sense of belonging, and so on. And then sort of the, just the converse of what we’ve mentioned before, ability to participate in sports that were enjoyed before experiencing the injury or disability.

And the barriers to facilitators of participation, for studies of the U.S. Veterans. There were two studies about, related to fly fishing in individuals with PTSD, or multiple sports in individuals with limb amputation. And the barriers that were reported there, some with just the, again, sort of the subset of what you heard before. Lack of information about opportunities, transportation, large group size being intimidating to some, lack of a sport partner, feeling of shame, fear of further injury, and so on. And as far as facilitators and motivators in the Veteran studies, there were six studies, fly fishing [unintelligible 36:05] PTSD, equine therapies with multiple conditions, and then multiple sports participation. And increased independence, maintaining activities of daily living, enjoying the outdoor environment, interacting with others with similar disabilities, increase self-esteem/self-efficacy, maintaining health and fitness, and so on. Acceptance of disability, fun and enjoyment, and sense of belonging. So those were comments from Veteran participants.

So, similar key findings. I wanted a picture of a equine therapy situation, I’m sorry it’s a little blurry here. Anyway, adapted sports programs studies, so again, these multi day programs. There was some evidence of association with, of the adaptive sports program participation and improved mental health outcomes and balance. There was little evidence of harms associated with the program participation. Again, remember most of those studies perhaps were not set up to monitor adverse events.

In the sports activity participation studies, some evidence of association of participation and greater self-esteem, athletic identity, and self-efficacy, and higher quality of life. Reported harps were largely shoulder and wrist pain in the wheelchair sports participants.

As far as key findings related to barriers to and facilitators of participation, they were similar across sports and populations. The barriers, largely factors related to physical environment and personal factors. And the facilitators and motivators, largely social factors and personal beliefs about the value of participation.

There are limitations of our work. The sports program studies that limited [unintelligible 38:06] of the existing evidence. The sports program studies, they were largely studies of equine therapy and participants with PTSD, MS, or history of stroke. So as that, one of those tables showed, a lot of the sports of interest and a lot of the conditions of interest were not represented in the literature. These studies enrolled selected individuals, people who agreed to participate in the sports program. Small sample sizes and few randomized trials. In the sports activity participation studies, they were largely studies of participants with spinal cord injury in multiple sports, so again, limited numbers of the conditions in sports of interest. And they were cross sectional studies largely, and most with no comparator group.

The outcomes of interest were infrequently reported. Especially self-esteem/perceived competence, community integration, and employment. And as I mentioned, no studies reported on healthcare utilization. The medical conditions were frequently self-reported, with little information in the studies about the severity, or the etiology, or comorbidities that the participants may have had. Most of the studies excluded individuals with sever illness or disability, or comorbid conditions. Because of a, I mentioned that we were not able to synthesize and come up with a quality of evidence, the variation in interventions and outcomes assessment precluded that. And also the fact that there were few sports and population studied. And you have to wonder about generalizability to other sports or populations. It may, it’s limited, we have limited ability to generalize to most other sports. Very few studies did anything with long-term follow-up or reported any long-term follow-up to determine whether participation continued, or whether benefits were maintained. And then fewer studies assessed the factors that motivate an individual to initiate participation in sports. Or what would help get people into the activity.

So our conclusions, the evidence suggests that adaptive sports participation may have benefits with few harms in selected populations. There’s insufficient information for many of the sports and many of the populations. And future research should focus on other sports and other populations, assess other outcomes of interest, include long-term follow-up, and identify motivators to initiation of participation. So that’s a summary of our evidence report, and I will turn it over to Leif or Joel.

Dr. Joel Scholten: Hi Nancy, this is Joel, can you hear me okay?

Dr. Nancy Greer: Yes, I can.

Dr. Joel Scholten: Okay, well thank you, thank you so much for that summary and for [unintelligible 41:18] really important work. I think it’s great to now have this consolidated report of what available evidence is out there. And I think all of us are keenly aware now of the need to expand this evidence base, as I’m sure many of the clinicians on the line have experiences of working with individual Veterans that have obtained significant benefit from participating in adaptive sports. And so I’m certain, hopeful that this kind of lays the groundwork for further study.

I’d also like to call on all of the clinicians that are participating in today’s call, it is inherent upon us to incorporate exercise, and exercise prescription with all of our patients. I was doing some literature review in preparation for, and after reviewing the results of this study, and there’s some interesting statistics to share. Less than a third of doctors in the United States prescribe exercise for their patients with knee osteoarthritis, which is really a shame because as a rehab provider I think exercise should be our first line of treatment or recommendation. But also, the research has shown that recommendations from a healthcare professional to undertake or incorporate exercise, and to adapt an active lifestyle is one of [inaudible 42:51] important factors, successful factors for individuals to do that. So, it is really a missed opportunity if we are not spending some time with our Veterans, actively prescribing and writing out a prescription to exercises. And also, one step further, individuals with disabilities are 82% more likely to be physically active if their healthcare provider recommends regular physical activity. So, that shows that we have some power, we should use this power wisely to advocate for an active lifestyle, and active engagement, and treatments that is likely one of the factors that all of us got into the field of rehabilitation medicine.

There, it was also interesting with your reports about the quality of life information, and sometimes there’s not a lot of detail in the research studies about that, but I think we can all, again, recall working with an individual patient that has obtained a significant amount of benefit from that kind of team concept of participating in a team sport, or in a team adaptive sport. Because Veterans I think really, that theme really of working in a team really resonates with Veterans.

So, great work. I think obviously more work to be done. And want to challenge everyone to incorporate a prescription of physical activity and incorporation of adaptive sports then into an active treatment plan. Because that’s where I think we will see the major benefit to, for Veterans and for our healthcare system. So with that, I will turn it over to Leif.

Dr. Leif Nelson: Great. Thank you, Dr. Scholten, and thank you, Nancy. Hey, I appreciate the opportunity to kind of give some thoughts here at the end too. And really for me, kind of seeing the poll, and seeing that the majority of folks here on this webinar are clinicians, rehab therapist, doctors, nurses, but those of you that are part of that adaptive sports medicine team. And so I just, what I want to touch on is kind of what is the role of you, the clinician, in adaptive sports medicine being delivered by VA providers, right? And so, I think to kind of go off of the last statement that Dr. Scholten just said there, is you would look at the barriers and facilitators, and ultimately you are a facilitator. And so the science backs it up backs it up based on what Dr. Scholten is referencing, but the key is, is you know, and this is also what we’re seeing from the national rehabilitation event, is that we’re seeing Veterans showing up at our programs, and one of the primary reasons is always you. You know, either on referral, or bringing them as a coach, or whatever your role may be. And so what’s great about this review is we now also have the barriers laid out. We know there’s barriers, you know there’s barriers, but now we have those barriers laid out. And the great thing about it is many of these are modifiable by you. Right? So, you know, lack of playing a sport before injury, their current health status or current level of pain, fear of being a burden, right? Lack of information, transportation and cost, lack of having a partner or feeling like they’re out of place, having a fear of injury, or ultimately assessability of doing that activity, these are all things that you can either work on, on the front end, or by being there with them either delivering the adaptive sports or working with a community provider to do that.

When we look at the effectiveness and what we saw kind of from the effectiveness, we look at what we do here in VA, right? We are treating the whole patient, or the Veteran, all that, we’re just in all aspects of gains they can get, and happy with adaptive sports being kind of the vessel for that. Whether it leads to more activity in sports, or whether it leads to something else. And so there’s a little bit of kind of science here backing up potential correlations with increased employment. That’s terrific. We’re seeing positive improvement in mental health or in populations with mental health conditions. So what does that tell me? That tells me that we should look at our programs and try to be as inclusive as possible. Right? So include, having programs that are jointly for our Veterans with physical disabilities as well as mental health conditions. If we can improve PTSD, again, that’s something that’s, or the symptoms of PTSD, that’s something that we’ll see in Veterans with physical disabilities and Veterans that that’s kind of their primary challenge.

And I think the last thing we saw kind of in the effectiveness, that kind of I’ll ride off into the sunset here on, is that there are few improvements in physical outcomes that were shown from this review. And, you know, for me, the way I see that is there’s really a lack of measurement. So we’re not capturing, and we’re definitely, it hasn’t been captured in the science, is kind of what are the physical improvements? We know generally, right? We know the benefits of exercise, and Dr. Scholten mentioned that, and so we know folks we can improve the, help these health factors, and baselines with exercise and activity. But we don’t necessarily have specific functional outcomes that relate to this outside of kind of some balance measures in a specific population that Nancy noted. So, I guess with that, this is kind of my tasking to you, or my ask, is that we need to collect those functional outcomes. And so the best way to do that is to collaborate with your local team. Right? So the, you want to collaborate with your local team to figure, identify what’s the best outcome measures for your population, right? And so, you know, it’s going, and as long as you’re capturing that you’re going to be able to show to your local leadership that your Veterans are benefiting from this care and garner more support. You’ll be able to show to the Veterans you’re treating that they’re having improvements in function. And that’s going to help sell it there. And, you know, as well as to yourself, right? To know that the course you’re on is appropriate, or maybe if the gains aren’t where you want them to be maybe you need to pivot and go in a slightly different direction. But I guess as you identify those, share them with us, we are interested in the outcomes you’re finding.

And then the, I guess the other last thing I just wanted to touch on, when I did promise riding off in the sunset, there was one other thing is, and this, what I reminded me of this is the collaboration component, is something else that Nancy touched on was the harm. Like what are the harms of participation in adaptive sports? And I think as clinical providers these are all things that you have expertise to address. So, being experts in care, healthcare for Veterans with disabilities, you know, this is right in your wheelhouse. And so, you know, when we look at the, you know, if we can staff our adaptive sports activities and programs, and true, with you it becomes an adaptive sports medicine model. And, you know, what we’re seeing is there’s complications of, you know, exacerbations of the symptoms of multiple sclerosis with exercise. Right? There can be seating issues that could lead to skin breakdown in individuals with spinal cord injury. The overuse injury in the shoulder of a population that primary, their main means of mobility is using their upper extremities. Or injuries kind of you specifically noted powerlifting, but like technique injuries, and so if you understand mechanisms of injury for overuse or other aspects you can work with the adaptive sport coaches, and these other individuals to work on what’s the proper technique. And then there’s also the aspects that you’re experts in that maybe an adaptive sports coach isn’t, and that could be things like transfers. And things along those lines. If you’re going from a wheelchair down to a sailboat, or you’re going kind of uphill, out of a piece of adaptive sports equipment back into your wheelchair, you know, these are things where we put your shoulder at risk. And so to work on those techniques and integrate those into the programs, you know, those are some key roles for the adaptive sports provider in VA.

And so I think at this point that will be the end of the prepared comments. And I think we can transition into some questions, if there’s any out there from the audience.

Heidi: Right now we do not have any pending questions. For the audience, this is a great opportunity, we do have a few minutes to handle any questions. Please use that questions screen on GoToWebinar to submit any questions that you have into us.

Dr. Leif Nelson: Yeah, and if you wanted to click to the next\_

Dr. Nancy Greer: And I’m just going to throw a [unintelligible 52:31]

Dr. Leif Nelson: If we want to click to the next slide, while that’s happening, I can just give the last announcement kind of a precursor to buy some time here. We do our next adaptive sports and therapeutic arts grand rounds is June 26th, at 1:00. It will be a, based from a music therapist, Jillian Thompson. We also encourage everybody to join our listserv, Sports4Vets and Arts4Vets, you can email [veta.brooks1@va.gov](mailto:veta.brooks1@va.gov) to join either one of those groups. And don’t forget to do your survey. There’s a link here as well, and I will hand it back to field the questions.

Heidi: We still have not received any questions in. I guess you guys covered the material so well nobody has any questions.

Dr. Nancy Greer: And this is Nancy, if you think of anything please email, I’d be glad to answer that way.

Heidi: Fantastic. So it’s, since we’re not receiving anything in we can probably close things out today. I really wanted to thank our presenter and discussants for preparing and presenting today, we really do appreciate all of your time. For the audience, we also have a survey that’s going to pop up when you close out of the meeting here today, please take a few moments to fill that out, we really do appreciate all of your feedback. And thank you everyone for joining us for today’s HSR&D Cyberseminar, and we look forward to seeing you at a future session. Thank you.

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