FLORIDA STATE UNIVERSITY

NEWSLETTER
INSTITUTE FOR SUCCESSFUL LONGEVITY

Technology and Older Adults

- ISL Director Neil Charness takes another look at digital assets and two-factor authentication
- ISL Spring Speaker Bo Xie of the University of Texas talks of stereotypes of older tech users
- Are older adults using out-of-date devices? ISL post-doc Nicholas Gray wants to know
- Neil Charness speaks on aging and technology at University of Waterloo conference

Protecting your digital assets: Know the risks of sharing data

I recently wrote about the need to plan ways to transfer your digital assets to heirs, particularly in light of the increased deployment of two-factor authentication (2FA). My advice is to provide heirs with the necessary information to log in to critical accounts (account name, password) and to use a form of 2FA such as a physical USB key to provide access to devices such as smartphones, tablets, and computers. The reason for arguing for a USB key or other 2FA physical authentication method is that biometric information such as a fingerprint will not work when you die.

Here, I would like to talk about how to transfer your digital information safely and cover some of the risks of sharing this information.

Some of you may be familiar with Shakespeare's famous tragedy, King Lear. Lear, an English king, gave up the keys to the kingdom to his treacherous heirs prematurely, ended up losing his power, financial resources, dignity, and finally his life. Hopefully, your heirs will prove to be less like Lear's ungrateful daughters, Regan and Goneril, and more like his loving daughter, Cordelia. However, an important decision is how to safely transfer your digital assets if you do suspect that some heirs are too immature or careless to manage them should you share them while you are alive.

FROM THE DIRECTOR

Neil Charness, Ph.D., is the William G. Chase Professor of Psychology at Florida State University and director of the Institute for Successful Longevity.

You need to take care. There are many examples of dangers arising from sharing financial resources, such as through shared bank accounts, co-signed credit cards, or jointly guaranteed loans. You are on the hook if your partner on the account misuses funds.

The difference with newer asset types is that a single digital portal, such as your email account, may provide the keys to your digital kingdom. How? Verification emails are typically sent to your email when, for instance, there is a change to one of your registered accounts, such as switching to a new email address or changing the form of payment. Imagine that a hacker (or worse yet, your faithless daughter Goneril) has learned or guessed your email name and password. The first thing that they might do is to change the password and contact email address to their personal password and email in order to take full control of the account. Now they can use the information in that email account to learn about other accounts and take them over, too.

Of course, if you implemented two-factor authentication on these accounts, people (hackers, Regan & Goneril) cannot access them without that second factor (account name and password are not enough), so you should probably adopt 2FA for those accounts. Still, you need to keep in mind the need to share that second form of authentication on death or disablement with a trustworthy person.

How you do this is up to you. You could store a backup of the second factor, if it is in the form of a USB key, with an attorney or other trusted professional and let your heirs know in advance that they will need to contact that person. You could store the backup, along with your email account name and password in a safe in your home and let your heirs know the combination to the safe. You could be even fancier, if you have a Google account, and use their Inactive Account Manager feature https://support.google.com/accounts/answer/3036546?hl=en. It generates an automated email to designated parties three months after you've stopped accessing Google services, presumably because you died or became disabled. That

automatically generated email could contain the combination to the safe or other information as part of the message.

Of course, you will need to review your account settings, perhaps annually, to make sure that the email address or addresses are up to date.

Another concern is with automatic payment of recurring bills. Many of our accounts are now "virtually" controlled. For instance, to get the best rates for mobile phone accounts, you need to provide automated billing/access to your account. The same is often the case for Internet services or wired telephone accounts. Vendors want to be assured of payment, eliminate the cost of mailing you bills, and directly access bank or credit-card accounts. Should you die suddenly or become incapacitated, companies will automatically continue debiting your accounts for services that you can no longer cancel, until your heirs can find information about them and terminate those services on your behalf.

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If you used Google's automated email, your heirs might only get access to the safe, and hence information about such accounts, months after you die or become incapacitated. I suppose it is better late than never.

Even with careful planning of this type, there are still "gotchas" for heirs. For instance, say that your heirs try to turn off a smartphone account. They may need a third form of identification, an account code, in addition to the other forms of identification, so you ought to make that information available to heirs as well.

In summary, transferring your digital assets takes planning, not unlike other aspects of your estate. However, digital assets have unique features that require extra effort on your part if you want to transfer them safely and minimize stress for your heirs. Hopefully, those heirs will behave more like Cordelia than Regan and Goneril. ■

Ashley Archer wins ISL Poster Day competition with presentation on walking and aphasia

Ashley Archer, a graduate student working with ISL Faculty Affiliate Elizabeth Madden, Ph.D., won the Institute for Successful Longevity's Student Poster Day competition, with her poster on her research on stroke victims and aphasia.

Ashley Archer is a graduate student working with ISL Faculty Affiliate Elizabeth Madden.

Archer was one of six ISL graduate students in the competition, conducted online due to Covid-19.

In the competition, graduate students showed their posters and explained their research and took questions from other graduate students, faculty and a three-judge panel.

Archer's poster and presentation, "The Effect of Cognitive-Linguistic Load on Gait Performance in Persons with Aphasia," summarized her work so far on victims of stroke and the problems they have with aphasia, the diminished speech ability that afflicts many stroke victims. Archer looked at how the demands of speech can cause problems with walking in some people with aphasia.

Archer is pursuing a master's degree in the School of Communication Science & Disorders, part of FSU's College of Communication & Information. Her work on aphasia began when Archer was still an undergraduate student. "My senior thesis, 'Gait Disruptions in Persons with Aphasia,' highlighted the impact of injurious falls and how persons overcoming a neurological deficit, i.e., aphasia, may be at an increased risk of falling," Archer said. ■

Older adults need training, support and technology designed to meet their needs, says ISL speaker Bo Xie

Conventional wisdom has it that older adults can't figure out digital technology. Bo Xie, an expert on technology and older adults at the University of Texas at Austin, is having none of that.

Professor Bo Xie of the University of Texas at Austin, an expert on older adults and technology, will speak May 13 via Zoom as part of the Institute for Successful Longevity Speaker Series. The public is invited to watch her address. To register and get a link, please send an email request to ISL@fsu.edu.

It's not that older adults lack the ability to use technology, she said in an interview in advance of her May 13 talk as part of the Institute for Successful Longevity Speaker Series. What older adults actually lack is access and adequate training. Access means affordable Internet service that is easy to use and good, reliable hardware designed for older hands and eyes — not a grandson's outdated iPhone 5 — and training means reliable, understandable tech support.

All this is critical, in Xie's view, as older adults enter the digital health era. "People need to have, as part of their basic human rights, access to digital information, digital services," she said. The digital world, however, is way behind in meeting these basic needs.

Xie will talk about these and other issues in her address "Aging in the Digital Health Era" at 4 p.m. May 13. Her talk will be via Zoom and is open to the public. To get the Zoom link, please send an email message to ISL@fsu.edu.

As a professor in the University of Texas at Austin's School of Nursing and School of Information, Xie conducts research focused on understanding the needs of older adults for health information and services and on how technology can be designed and used to meet these needs. Her research has implications for reducing digital inequalities and ensuring patient-centered care in the digital health era.

In the modern world, Xie says, digital access is critically necessary, and funding is essential. Her project in Austin to provide access to older adults is supported by the National Institute on Aging, but funding, she says, does not have to come from the federal government. "So long as there is funding, it could be coming from anywhere," she said. The support is needed, she argued, to hire and train people to help older adults get digital technology working. This is hard work, she cautioned, and proper training is a requirement.

Xie trains students to help older adults with their digital literacy, but she stresses the benefit of training older adults, too, to

be mentors for their peers. "This peer-learning aspect actually can be very useful because sometimes for people who know so much, who have so much more experience with technology, we may forget what it's like not to have sufficient knowledge and not to know how to learn about it," she said. "But if you are learning from someone who's just maybe one step ahead or maybe a half-step ahead, it's a lot easier to communicate, and it is a lot easier for the mentor to understand the struggles people are going through." Training older adults, Xie said, is central to bridging the age digital divide.

Another issue, she said, is design. Digital equipment is seldom created with older adults in mind.

"In my work, I focus on two key aspects," Xi said. "One is to help improve older adults' literacy, specifically eHealth literacy. The other aspect is to try to design technology that is age appropriate, that is senior-friendly. The concept I have been using in my study is that older adults are relevant but absent from technology design."

A key cause, she said, is that the field of design is full of young men and women who are unaware of the needs of older individuals. "Designers are not older adults," she said. "Often they have no clue how older adults would react to the technology they design. Often the designers have this mentality that if you design it, if you build it, people will use it. But that is so not true. We need to make sure technology is really user-friendly…. It really takes a lot of effort," she said, "and oftentimes the designers don't want to invite end users into the design process early on."

In my work, I focus on two key aspects. One is to help improve older adults' literacy, specifically health literacy. The other aspect is to try to design technology that is age appropriate, that is senior-friendly. The concept I have been using in my study is that older adults are relevant but absent from technology design.

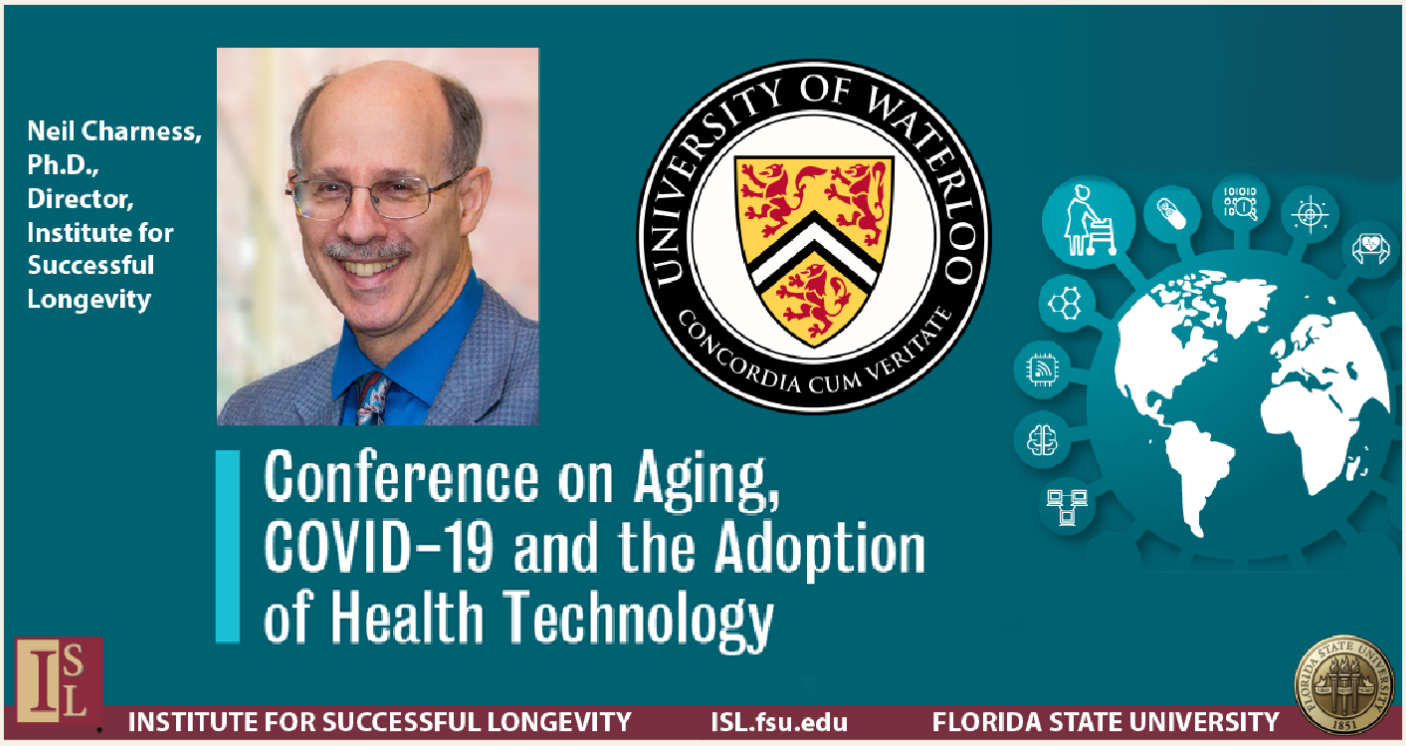
This design-first, get-feedback-later approach created problems when states and communities responded to the pandemic, Xie said. "We're seeing some of that now with the web access to register for your COVID-19 vaccines," she said. "A lot of people find it not user-friendly, and particularly older adults just feel shut out. And, of course, you also have the problem of the digital divide — it's almost a requirement that you have high-speed Internet access. Some people do, some people don't."

Even her colleagues and students have struggled with setting up vaccine registration for their parents and grandparents. "The web design is so bad," she said. "They were like, 'Well it took the whole day to figure this out. How could my parents or grandparents possibly have done this by themselves?' It shouldn't be this hard."

These problems are manifold, and the solutions will have to be as well. Xie said the process starts with changing perceptions. "Designing a technology that can work for everybody, it really requires a mindset change," she said. "Also, I think as advocates for older adults who want to adopt the technology we need to be more conscious to intentionally reach out to try to change people's mindsets…. We need to go against the ageism, the stereotypes against old people."

Part of this mindset reform is getting across that "older people" embraces individuals of many backgrounds, ages, experiences and skills. "The older population is very diverse," Xie said. "What counts as 'older' is very debatable. There are different definitions, but if we say 65-plus, well, a 65-plus technology user is very different from someone who's maybe 95 years old and also very different from someone who has not used a computer in their entire life versus someone who's been using technology for years, like a computer-science professor."

Understanding this complexity and coming to terms with it, incorporating it into our technology strategies and our technology designs is key, Xie said. "We need to really take into account that diversity aspect," she said. "The older population is very diverse. How are we going to design technology that would work for everybody? It's a huge challenge, but at least we can get started thinking how we can change people's mindsets." ■



ISL Director gives keynote on aging and tech at University of Waterloo conference

Technology's role in helping adults remain active in their senior years has great promise, but there remain significant limits that must be addressed before widespread adoption and use, Neil Charness, Ph.D., Director of the Institute for Successful Longevity, said in the keynote address to the University of Waterloo's Virtual Conference on Aging, COVID-19 and the Adoption of Health Technology.

Charness joined other aging and technology researchers, clinicians and frontline workers, members of advocacy groups, policymakers, and other speakers who contributed to the two-day (March 24-25) virtual event.

In his address, Charness spoke of the promise and limits of technology to promote successful longevity and asked participants to consider two concurrent revolutions of modern life: the widespread expansion of life expectancies and the rapid diffusion of new technologies.

People are living much longer than they were just a few generations ago, Charness said. "That's what we call the longevity dividend," he said, "the fact that the children born today can expect to live in the world about 25 years longer than they could only 70 years ago."

Concurrent with this expansion of longevity, Charness said, was an accelerated diffusion of technology. "When you put these two together, in this case the aging revolution and the technology-diffusion revolution, unfortunately we see that older adults are still lagging," he said. When we look at Internet use, Charness said, we can see that lag clearly. "About a quarter of older adults, 65-plus, in the United States, are still not on the Internet," Charness said.

Charness explained the framework he developed for viewing technology's role in successful longevity, which he terms PRAS:

Prevent impairments, Rehabilitate, Augment (support a failing function), and Substitute (replace a failing function, such as hearing). In his address Charness applied the PRAS framework to a number of points of intersection of technology and older adults, such as the controversy over claims for brain-training programs and the addition of advanced driver-assistance systems in new cars, and he noted the promise and the limitations of each.

Charness also looked at the issue of loneliness, which he said was a serious public-health problem. "The question we have is, can technology help, particularly now that everyone is suffering from social isolation, due to Covid?" Charness said. He reported the mixed results found through his own research in the CREATE PRISM project, which put technology — specially prepared computer tablets — in the hands of older adults. "The question is, are those types of tools effective?" His research team is pursuing that question with its PRISM II project.

Charness also told of the Institute for Successful Longevity's Zoom initiative, which was launched to help older, isolated adults stay connected with friends and family in a time of stay-at-home practices and social distancing. Charness' institute developed guides to show older adults how to use the online service to stay connected. "Zoom has great videos on their web site, but they are tough to follow if you are trying to use step-by-step procedures," Charness said. The Institute for Successful Longevity created Zoom guides to fill that breach, he said, and the guides have been widely used. "So carefully designed, step-by-step instructions can help novice seniors get onto Zoom," Charness said. "We coordinated with our Senior Center and provided them with mentors to help other seniors. We think that technologies that promote social participation can be helpful. I don't think they can substitute for human contact … but they can be very useful."

Charness also addressed the potential promise of autonomous vehicles, the self-driving cars that always seem just around the corner but have not yet entered the mainstream. He noted that current attitudes toward autonomous vehicles, primarily safety concerns, are not favorable among older adults.

Older adults are slow to take up other new technologies, too, Charness said, citing a Pew survey that found that three-quarters of those age 65 and older indicated that when setting up a new electronic device they needed help from others. "That's an indictment of the design community," Charness said.

In summary, Charness, said, "I think technology products and systems hold considerable promise for rehabilitating, augmenting and in some cases even substituting for age-related negative changes…. I think, however, there are some serious limits for technology adoption that probably produce the aging digital divide."

Charness said the first is usability of the product systems offered. The second is the reliability of integrated human-system integration. Despite these persistent drags on technology adoption, we can be optimistic, Charness said, and he ended his address with a family photo of his parents, ages 98 and 96, and their great-grandchildren. "My hope is that we are going to design better products for them [the great-grandchildren], so that they don't fall behind as they get to same age as my parents." ■

How old, and how smart, is your smartphone? ISL post-doc Nicholas Gray wants to know

Smartphones and other digital technology hold lots of promise for researchers pursuing ways to assist older adults. But are older Americans using the latest versions or are they keeping their phones well past their expiration dates? There is no reliable information to guide researchers. Nicholas Gray, the Institute for Successful Longevity's post-doc researcher, hopes to fill this data gap with his study, now underway.

Nicholas Gray, Ph.D., is the Institute for Successful Longevity's post-doc researcher.

"There's been some research and some survey data looking at how many older adults actually own, say, a smartphone or a given technological device," Gray said. "There's a lot less known about what that device is capable of. So, if it is an older model, is it obsolete in some way?" With his study, Gray is working to clear up this uncertainty.

The question of what kind of devices do older adults own, and what can those devices do, is important as researchers work to develop interventions that rely on smartphones or other technology. Out-of-date phones pose a problem if researchers aren't taking them into account. "If there's a program being developed, whether it's a cognitive intervention or health monitoring or something like that," Gray said, "the older device might not be capable of supporting it."

Smartphones are a big piece of Gray's study, but he's also getting a measure of computers, tablets and anything that the older adults use. "We try to get a broad feel for the technology they own, how old it is and how long they plan on keeping it," he said. Gray is surveying individuals contacted through Mechanical Turk, a crowd-sourcing web site run by Amazon, and Prolific, a similar service connecting researchers with participants. He also tapped into the Institute for Successful Longevity's Participant Registry of volunteers.

In his study, Gray is also exploring the question of how older adults get technical support for their devices and whether there is an upside to the give-your-phone-to-grandma tech exchange. "I'm asking for the devices you own, how did you get it, if you bought it new, and if it is used was it given from a family member," Gray said. "Getting phones handed up to them from their kids, that seems to be a common occurrence, and it likely offers some degree of built-in tech support as well. So, if you're getting a device from a family member, they can support you if you run into issues. I think that's a really big deal. It can certainly ease the transition if you're not familiar with these types of technology if you have a family member there who gave you the technology and can help you."

Gray's work could determine how often this family-support role takes place and how often other older adults are left on their own, with no nieces or nephews to lend a hand, and how these individuals try to solve their tech-support problems.

A native of Cincinnati, Gray came to Florida State University in 2013 after graduating from Ohio State University with a bachelor's degree in psychology. At FSU, he studied cognitive psychology under Dr. Colleen Kelley, focusing on memory, particularly the impact of being spontaneously reminded (drawing associations between the past and present). He received has master's in 2016 and earned the Ph.D. in 2019. Later that year he joined the Institute for Successful Longevity as a post-doc, where he assists with ISL projects as well as conducts research on his own. ■

Neil Charness, Director of the Institute, named Distinguished Research Professor

Neil Charness, Ph.D., the William G. Chase Professor of Psychology and director of the Institute for Successful Longevity, was named Distinguished Research Professor at Florida State University's 2021 Faculty Awards ceremony.

Charness received the honorary title of "Distinguished Research Professor" and a one-time award of $10,000. The designation recognizes and honors outstanding research, scholarly and creative activity among FSU faculty having national and international visibility and the rank of full professor.

"Neil Charness is an elite scholar who has profoundly shaped our understanding of the science of successful aging," said Frank Johnson, chair of the Department of Psychology. "He is known internationally as one of the most influential minds in his field, bringing great distinction to Florida State University. That Neil is also one of the kindest and most thoughtful people you will ever meet makes this moment even more joyful!"

"I am honored that my peers have recommended me to join the ranks of the Distinguished Research Professors at FSU," Charness said. "The award is testimony to the many exciting and fruitful research collaborations I've enjoyed with my students and colleagues."

Neil Charness, director of the Institute for Successful Longevity, and three of the Institute's Faculty Affiliates were honored at FSU's 2021 Faculty Awards ceremony.

The award is sponsored by the Council on Research and Creativity in FSU's Office of Research Development.

This year the ceremony was held virtually on April 29. Also at the award ceremony:

- ISL Faculty Affiliate Robb Tomko of the Department of Biomedical Sciences in the College of Medicine received the Undergraduate Research Mentor Award, from the Center for Undergraduate Research and Academic Engagement. The honor includes a $2,000 award.



ISL Faculty Affiliate Robb Tomko, left, received the Undergraduate Research Mentor Award; ISL Faculty Affiliate Thomas Joiner, center, received a Graduate Faculty Mentor Award; and ISL Faculty Affiliate Yan Li received a Developing Scholar Award.

- ISL Faculty Affiliate Thomas Joiner of the Department of Psychology received a Graduate Faculty Mentor Award, as did four other FSU faculty members, from the Graduate School. The honor includes a $3,000 award. Joiner also is a Robert O. Lawton Distinguished Professor, the highest honor the FSU faculty can bestow on a colleague, a distinction he received in 2010.

- ISL Faculty Affiliate Yan Li of the FAMU-FSU College of Engineering received a Developing Scholar Award, as did three other faculty members, from the Council on Research and Creativity. Li's award provides $10,000 to be used in the coming year to promote her research.

Charness' research centers on understanding the aging process and its implications for technology use (particularly for health), work performance, and expert performance. He also conducts human factors research on older driver and pedestrian safety. These research projects are being funded by the National Institutes of Health/National Institute on Aging, and the U.S. Department of Transportation and the Florida Department of Transportation.

Charness has published more than 200 journal articles, book chapters, proceedings papers, and technical reports, and also co-authored books on *Designing Telehealth for an Aging Population: A Human Factors Perspective; Designing for older adults: Principles and creative human factors approaches (3rd Edition); and Designing for older adults: Case studies, methods, and tools*.

He is a Fellow of the American Psychological Association, the Association for Psychological Science, and the Gerontological Society of America. He received the Jack A. Kraft Innovator Award, the Franklin V. Taylor Award, the M. Powell Lawton award, the APA Prize for Interdisciplinary Team Research, Grandmaster of the International Society for Gerontechnology, and APA's Committee on Aging award for the Advancement of Psychology and Aging.

Charness received his BA from McGill University (1969) and MSc and Ph.D. from Carnegie Mellon University (1971, 1974) in Psychology. He was Assistant Professor at Wilfrid Laurier University in Ontario (1974-1977), then Assistant, Associate and Full Professor at the University of Waterloo, Ontario (1977-1994), before joining FSU's Psychology Department in 1994. ■

ISL Planning Grants support research into causes of muscle loss in older adults

ISL Planning Grants winners for 2021, from left: Bradley Gordon and Michael Delp; Jennifer Steiner and Ravinder Nagpal; all are in the College of Human Sciences.

The Institute for Successful Longevity has awarded its 2021 ISL Planning Grants to Bradley Gordon and Michael Delp, for their project to establish the contribution of specific genes to the loss of skeletal muscle in response to disuse, and to Jennifer Steiner and Ravinder Nagpal, for their study of the effects of alcohol use and associated gut microbiome decline on aging-related loss of skeletal muscle mass and strength.

Gordon, Steiner and Nagpal are all assistant professors in the Department of Nutrition, Food & Exercise Sciences in the College of Human Sciences. Delp is dean of the college.

Each ISL Planning Grant provides a $15,500 award in support of research in a new direction or provides continuing support of existing research with the goal of improving the opportunity for successful longevity.

“We are pleased to support these scientists as they conduct research on the loss of muscle mass and strength in older adults,” said Neil Charness, Director of the Institute for Successful Longevity. “This is an important area of concern, and new research is needed to explore possible interventions that could arrest or mitigate these losses.”

Gordon’s research focuses on understanding how stimuli such as nutrients, hormones, and physical activity regulate change in skeletal muscle mass and muscle function in diseased and non-diseased conditions. On this project, Gordon continues his research on molecular factors in age-related muscle loss.

Delp’s research is primarily focused on understanding the effects of physical activity on the cardiovascular system.

“The loss of skeletal muscle with age impairs physical function, increases the risk of disease and death, and imparts a heavy financial burden on the health-care system,” Gordon, lead investigator on the project, wrote in the request for funding. “Though decreased physical activity (referred to as disuse) promotes the loss of skeletal muscle in all age groups, the loss of skeletal muscle is accelerated in the elderly. This accelerated loss of skeletal muscle occurs within five days of disuse. This is a profound problem for the elderly because they may never recover the lost muscle when they return to normal activity.” This problem is critical, according to Gordon, yet there are no therapies to prevent the accelerated loss of aged muscle in

response to disuse. "A primary reason," he wrote, "is that the molecular factors causing the greater loss of aged muscle are unknown."

In this study, Gordon will seek to establish the contribution of two novel genes his research had identified earlier in relation to aged skeletal muscle loss due to disuse. "This will define the potential for targeting these novel genes therapeutically to preserve skeletal muscle and maintain health in elderly individuals that are subjected to disuse," Gordon wrote.

Steiner's research interests include the role of nutrition and exercise in the prevention and treatment of disease as well as the promotion of optimal health and performance, with a focus on the impact of alcohol and different dietary and exercise treatments on the maintenance of skeletal muscle health.

Nagpal's research focuses on understanding the host-associated gut microbiome and the dynamics of the diet-gut-brain interface at the extremes of aging and in aging-associated metabolic and cognitive health.

In their project, Steiner and Nagpal will look at the loss of skeletal muscle mass and strength and negative effects of alcohol use on the gut microbiome, which is made up of many bacterial species that can influence other body tissues via release of metabolites and regulation of nutrient absorption. Older adults are drinking more alcohol, Steiner, the lead investigator, said in the funding request, but "no well-controlled, interventional studies have been performed to determine whether alcohol enhances sarcopenia [muscle loss with aging] and gut dysbiosis [microbiome decline], or whether gut dysbiosis may contribute to alcohol-enhanced sarcopenia."

Steiner and Nagpal will investigate whether alcohol also exacerbates aging-related changes to the gut microbiome and whether changes in the gut microbiome are associated with alcohol-induced exacerbation of sarcopenia. ■

ISL Faculty Affiliate Aaron Wilber awarded $2.2-million NIH grant for Alzheimer's study

Aaron Wilber, a Faculty Affiliate of the Institute for Successful Longevity, has been awarded a $2.2-million grant from the National Institutes of Health to study sleep-related brain function in Alzheimer's disease.

Wilber, Assistant Professor of Psychology and Neuroscience, will receive the grant, awarded through the NIH's National Institute on Aging, over the course of the next five years.

"One reason Alzheimer's treatments have failed may be because it's difficult to catch the disease before the brain has become too dysfunctional to recover," Wilber said. "This grant is focused on identifying early changes in the brain, and we hope that looking earlier in the disease progression will yield new insight into approaches for detecting and treating Alzheimer's disease. We are also looking at later timepoints, since more is known about later brain changes in Alzheimer's disease."

Wilber's team — including research scientist Shawn Moseley and graduate students Sarah Danielle Benthem and Alina Stimmell, and co-senior investigator Benjamin Clark from the University of New Mexico — will assess the relationship between spatial learning and memory and the brain's dynamics during sleep. Using mouse models, they will examine these dynamics within and across the hippocampus and parietal cortex, brain regions involved in spatial navigation learning and memory.

"This project will provide insight into the normal function of a circuit that is dysfunctional in Alzheimer's disease and allow us to probe dysfunction in this circuit that emerges in early stages of disease progression in mice modeling aspects of Alzheimer's disease seen in humans," Wilber said. "This research will allow us to begin understanding changes in this network, which may underlie the emergence of cognitive impairments observed in Alzheimer's disease, and begin testing the efficacy of a non-invasive treatment for reversing functional brain abnormalities and impaired cognition." ■