Abnormal Motion Research

Motion Abnormalities for Aditya	Detection of Abnormal Living Patterns for Elderly Living Alone Using Support Vector Data Description	• Weakness ("abnormal conditions for the elderly people who living alone, including “weakness,”") • Seizures ("abnormal conditions for the elderly people who living alone, including ... “seizures,”") • Falls ("abnormal conditions for the elderly people who living alone, including ... “falls,”") • Diabetic patient with hypoglycemia ("abnormal conditions for the elderly people who living alone, including ... “diabetic patient with hypoglycemia,”") • Dead ("abnormal conditions for the elderly people who living alone, including ... “dead,”") • Unresponsive statuses ("The activity level was related to the subject·s physical condition like weaknesses, falls, and unresponsive statuses.") • Osteoporosis ("This feature can be influenced by the subject·s general health condition or diseases, e.g., osteoporosis") • Abnormal health situations ("The NRI has the ability to reflect and detect unusual conditions, e.g., falls, abnormal health situations, unresponsive statuses, etc.")
	Efficient and Robust Skeleton-Based Quality Assessment and Abnormality Detection in Human Action Performance	
	Research Article #1	• Gait abnormalities, such as shuffling gait, slow gait, and an uneven distribution of weight on the feet ("Gait abnormalities such as shuffling gait, slow gait, and uneven distribution of weight..."). • Reduced lower limb strength and muscle mass, which can lead to a reduced ability to maintain balance and support the body during movement ("Muscle weakness and loss of muscle mass in the lower limbs can lead to a reduction in the ability to maintain balance and support the body during movement..."). • Impaired sensory function, such as reduced visual acuity, vestibular dysfunction, and peripheral neuropathy, which can impact balance and spatial orientation ("Impaired sensory function such as reduced visual acuity, vestibular dysfunction, and peripheral neuropathy can impact balance and

		spatial orientation..."). ● Cognitive impairment, including dementia, which can lead to a reduced ability to plan and execute movements and make decisions about balance and coordination ("Cognitive impairment, including dementia, can lead to a reduction in the ability to plan and execute movements and make decisions about balance and coordination...").
	ResearchArticle2	● Reduced muscle strength and power, which can lead to difficulty with activities such as climbing stairs, rising from a chair, and carrying objects ("Reduced muscle strength and power is associated with difficulty in carrying out daily activities such as climbing stairs, rising from a chair and carrying objects..."). ● Reduced balance and gait stability, which can increase the risk of falls and reduce the ability to perform activities that require coordination and balance ("Reduced balance and gait stability increases the risk of falls and reduces the ability to perform activities that require coordination and balance..."). ● Reduced flexibility and range of motion, which can lead to difficulty with tasks such as bending, reaching, and twisting ("Reduced flexibility and range of motion is associated with difficulty in carrying out tasks such as bending, reaching, and twisting..."). ● Reduced cardiovascular endurance, which can lead to fatigue and shortness of breath during physical activity ("Reduced cardiovascular endurance can lead to fatigue and shortness of breath during physical activity...").
	Research Article 3	● Sudden changes in posture, such as rapid movements or sudden jerks ("Sudden changes in posture, such as rapid movements or sudden jerks, are detected by the system..."). ● Changes in gait patterns, such as shuffling or unsteady gait ("Changes in gait patterns, such as shuffling or unsteady gait, are detected by the system..."). ● Changes in walking speed, such as sudden decreases in speed or prolonged periods of slow walking ("Changes in walking speed, such as sudden decreases in speed or prolonged periods of slow walking, are detected by the system..."). ● Loss of balance or changes in weight distribution, such as sudden shifts in body position or uneven weight distribution on the feet ("Loss of balance or changes in weight distribution, such as sudden shifts in body position

		or uneven weight distribution on the feet, are detected by the system...").
	Research Article 4	• Gait and balance abnormalities, such as shuffling gait, slow gait, unsteady gait, and difficulty with turns ("Gait and balance abnormalities, such as shuffling gait, slow gait, unsteady gait, and difficulty with turns, are associated with an increased risk of falls..."). • Sensory deficits, including visual impairment, hearing loss, and vestibular dysfunction, which can affect balance and spatial orientation ("Sensory deficits, including visual impairment, hearing loss, and vestibular dysfunction, can affect balance and spatial orientation and increase the risk of falls..."). • Cognitive impairment, including dementia, which can affect the ability to plan and execute movements and make decisions about balance and coordination ("Cognitive impairment, including dementia, can affect the ability to plan and execute movements and make decisions about balance and coordination and increase the risk of falls..."). • Polypharmacy and medication side effects, which can cause dizziness, weakness, and impaired coordination ("Polypharmacy and medication side effects can cause dizziness, weakness, and impaired coordination, increasing the risk of falls...").
Attributes of older population		
	https://www.youtube.com/watch?v=RsYrRt3BjjM	2021
	https://www.who.int/news-room/fact-sheets/detail/ageing-and-health#:~:text=Common%20conditions%20in%20older%20age,conditions%20at%20the%20same%20time.	2022
	https://news.usc.edu/142450/distracted-older-adults/	2018
	https://www.mic.com/life/screen-time-is-higher-for-the-elderly-than-younger-people-new-data-reports-18660210#:	2019

	~:text=According%20to%20Nielsen%20data%20published,day%20in%20front%20of%20screens.	
	https://www.pewresearch.org/fact-tank/2019/06/18/americans-60-and-older-are-spending-more-time-in-front-of-their-screens-than-a-decade-ago/	2019
	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4906358/	2016
	https://www.nia.nih.gov/health/memory-forgetfulness-and-aging-whats-normal-and-whats-not	
	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4331509/#:~:text=In%20the%20scientific%20literature%2C%20there,coordinated%20and%20less%20controlled%20performances.	2015