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Impact of Stress Urinary Incontinence on Physical Activity Level of Females - Observational Analytical Study

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ABSTRACT

This study evaluates the impact of stress urinary incontinence (SUI) on physical activity levels among Indian women aged 18–60 years and identifies associated risk factors including age, body mass index (BMI), parity, delivery type, urinary tract infections (UTIs), and caffeine consumption. An observational analytical study was conducted among 219 women attending the Outpatient Department of Dr. D. Y. Patil College of Physiotherapy, Pune. Participants completed the Urogenital Distress Inventory (UDI-6), International Physical Activity Questionnaire (IPAQ), and a structured risk factor questionnaire. Statistical analyses included descriptive statistics, Chi-square tests, Pearson's correlation, and Bonferroni post-hoc analysis (SPSS v26.0; $p<0.05$). SUI was diagnosed in 84 (38%) participants, predominantly among women aged 41–50 years. Significant associations were observed between SUI and age, BMI, parity, vaginal delivery, prolonged labor, caffeine intake, and UTIs ($p<0.05$). A moderate negative correlation existed between urinary distress severity and physical activity levels ($r=0.4395$, $p<0.00001$). Chi-square analysis revealed that physical activity decreased significantly with age ($p=0.0026$). Women with higher UDI-6 scores exhibited lower physical activity, indicating a strong relationship between sedentary behavior and worsening SUI symptoms. SUI substantially decreases physical activity levels among Indian women, exacerbating health risks and deteriorating quality of life. Early detection, education, and physiotherapeutic interventions focusing on pelvic floor rehabilitation and lifestyle modification are imperative for mitigating symptoms and enhancing functional health.

Keywords: Stress Urinary Incontinence, Physical Activity, Pelvic Floor Dysfunction

INTRODUCTION

The International Continence Society (ICS) defines urinary incontinence (UI) as the complaint of any involuntary leakage of urine that results in social or hygienic concerns, significantly impacting quality of life (QoL) [1]. Among the types of UI, stress urinary incontinence (SUI)—characterized by leakage during physical exertion, sneezing, or coughing—is the most prevalent, along with urge and mixed incontinence. Globally, the prevalence of female UI ranges between 8% and 45% [2]. In the Indian context, around 12% of women report UI, with SUI constituting a significant proportion of this burden [3].

According to the joint report of the International Urogynecology Association

(IUGA) and ICS, SUI results primarily from intrinsic urethral sphincter deficiency and impaired pelvic floor support, wherein physiotherapy plays a critical role in management [4]. The continence mechanism relies on the structural and neuromuscular integrity of the pelvic floor and surrounding urinary structures [5]. Contributing factors to SUI include childbirth-related trauma, advancing age, hormonal changes due to menopause, pelvic surgery, obesity, smoking, chronic constipation, COPD, estrogen deficiency, diabetes, hysterectomy, and pelvic organ prolapse [6]. Furthermore, medications such as diuretics, sedatives, antidepressants, and antihypertensives can aggravate UI symptoms [7].

Beyond the physical challenges, SUI has profound psychosocial repercussions. Women affected often experience decreased physical activity, anxiety, social withdrawal, depression, and lowered self-esteem [8]. Recurrent UTIs, dermatitis, and sleep disturbances are common physiological complications. The burden is particularly severe among rural Indian women, who face stigma, poor awareness, and limited access to healthcare resources [9].

Sociocultural myths—such as viewing UI as an inevitable part of aging or believing surgical treatment is the only solution—contribute to the underreporting and undertreatment of the condition [10]. In this context, physiotherapeutic interventions such as pelvic floor muscle training (PFMT), biofeedback, and lifestyle modifications provide safe, non-invasive alternatives that should be promoted through awareness initiatives [11].

The World Health Organization (WHO) defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure, encompassing occupational, transport-related, and leisure-time activity. Regular physical activity reduces the risk of non-communicable diseases (NCDs) including cardiovascular disease, diabetes, certain cancers, and musculoskeletal disorders [12]. However, emerging evidence suggests that SUI deters women from engaging in physical activity due to fear of urine leakage, thereby perpetuating a cycle of sedentarism, weight gain, and further pelvic floor weakening [13].

Despite these links, the interaction between SUI and physical activity among Indian females remains insufficiently explored. Cultural expectations, lifestyle patterns, and health-seeking behaviors in India further complicate this relationship. Therefore, this study was conducted to evaluate the impact of SUI on physical activity levels in Indian women and identify associated demographic and clinical risk factors.

MATERIALS & METHODS

This observational analytical study was conducted at the Outpatient Department of Dr. D. Y. Patil College of Physiotherapy, Pune, with the primary aim of evaluating the impact of stress urinary incontinence (SUI) on physical activity levels among Indian females. A total of 219 women aged between 18 and 60 years were recruited through purposive sampling, based on predefined inclusion and exclusion criteria.

Eligibility was determined by the presence of urinary leakage during physical exertion, frequent urination, and a self-reported occurrence of urinary incontinence at least once per week. Exclusion criteria comprised individuals with congenital or genetic disorders, psychological conditions such as delirium or dementia, acute infections, ongoing pregnancy, postpartum status within 12 months, and those unwilling to provide informed consent.

Ethical clearance was obtained from the institutional academic committee prior to the commencement of the study. Written informed consent was secured from each participant after a detailed explanation of the study objectives, procedures, confidentiality assurances, and voluntary participation, including the right to withdraw at any stage without penalty.

Data collection involved the administration of three instruments: a structured

sociodemographic and clinical risk factor questionnaire, the Urogenital Distress Inventory (UDI-6), and the International Physical Activity Questionnaire (IPAQ). The structured questionnaire captured data on age, marital status, body mass index (BMI), socioeconomic status, parity, mode and duration of labor, caffeine intake, urinary tract infection (UTI) history, and current medication usage.

The UDI-6, a validated instrument with an intraclass correlation coefficient (ICC) of 0.82, was used to assess the degree of urinary symptoms. It includes six items rated on a 4-point Likert scale; the mean score was multiplied by 25 to generate a final score ranging from 0 to 100. Scores above 33.33 indicated significant urinary distress. [13] As the sample population included both English-speaking and non-English-speaking women, the UDI-6 questionnaire was administered by the assessor, who translated the questions into the participants' preferred language—either Hindi or Marathi.

Physical activity levels were assessed using the self-reported IPAQ, a tool validated for adults aged 15–69 years. It classifies individuals into low, moderate, or high physical activity categories based on weekly energy expenditure calculated in MET-minutes. The IPAQ has demonstrated reliability (0.80) and moderate validity (0.30) across multiple populations [15].

IPAQ was administered in either English or Hindi, depending on participant preference. Risk factors identified through the structured questionnaire were documented concurrently.

STATISTICAL ANALYSIS

The Shapiro–Wilk test assessed normality of distribution. Inferential analysis included chi-square tests for categorical variables, bivariate and multivariate analysis for group comparisons. Data were securely recorded in Microsoft Excel and analyzed using SPSS version 26.0. Descriptive statistics (means and standard deviations) were used to summarize demographic data. Pearson's correlation was used to explore the relationship between urinary distress scores and physical activity levels. Bonferroni post-hoc analysis was applied for multiple group comparisons. Statistical significance was determined at $p < 0.05$.

TABLE 1- Prevalence of Urinary Incontinence

Age group	Females per age group (n)	Females having SUI (n)	%
18-30	51	15	29%
31-40	60	20	33%
41-50	62	27	43%
51-60	46	22	41%
Total N	219/400	84/135	38%

SUI was reported in 38% of the 219 females, with the highest prevalence in the 41–50 age group (43%), followed by the 51–60 group (41%), indicating greater occurrence among middle-aged women likely due to age-related pelvic floor weakening.

TABLE 2- Baseline Characteristics of Females with Urinary Incontinence

Variables	Categories	Frequency (n)	Percentage (%)
Age	18–30 years	51	23.00
	31–40 years	60	27.00
	41–50 years	62	28.31
	51–60 years	46	21.00
Marital Status	Married	183	83.56
	Unmarried	36	16.43
Body Mass Index (BMI)	Underweight	2	0.91
	Normal weight (17.50–22.99)	48	21.91
	Overweight (23.00–27.99)	148	67.58
	Obese (>28.00)	21	9.50

Socioeconomic Status	Upper class (26–29)	11	5.02
	Upper middle class (16–25)	56	25.57
	Middle class (11–15)	119	54.33
	Lower middle class (5–10)	33	15.06
	Lower class (<5)	0	0.00
Attended Menopause	Yes	37	16.89
	No	182	83.10
Number of Pregnancies	0	37	16.89
	1	24	10.95
	2	83	37.89
	3	49	22.37
	More than 3	26	11.87
Mode of Delivery	None	37	16.89
	Vaginal	96	43.83
	Caesarean	51	23.28
	Vaginal + Vacuum	16	7.30
	Vaginal + Caesarean	19	8.67
Labour Duration	None	37	16.89
	Less than 3 hours	32	14.61
	3–6 hours	67	30.59
	6–24 hours	63	28.76
	More than 24 hours	20	9.13
Caffeine Intake	Yes	194	88.58
	No	25	11.41
Urinary Tract Infection	Yes	116	52.96
	No	103	47.03
Prescribed Medication	None	163	74.42
	Diuretics	10	4.56
	Anti-hypertensive	42	19.17
	Anti-psychotics	2	0.91
	Sedatives	2	0.91
Stress Urinary Incontinence (SUI)	Yes	84	38.36
	No	135	61.64

Among the 219 females, most were aged 31–50 years, with 83.56% married. The majority were overweight (67.58%) and 54.33% belonged to the middle socioeconomic class. Only 16.89% had attained menopause. Obstetric history showed that 37.89% had two pregnancies, with nearly half having more than two. Vaginal delivery was most common (43.83%), and prolonged labour (3–24 hours) was frequent. A high proportion reported caffeine intake (88.58%) and urinary tract infections (52.96%), while 74.42% were not on prescribed medications. These baseline characteristics indicate a profile commonly associated with elevated SUI risk.

TABLE 3 - Association Between Risk Factors and Stress Urinary Incontinence

Variables	**Category**	**With SUI (n=84)**	**Without SUI (n=135)**	**p-value**	**OR (95% CI)**
Age	18–30 years	15	36	0.13	0.59 (0.30–1.17)
	31–40 years	20	40	0.34	0.74 (0.39-1.38)
	41–50 years	27	35	0.03	1.35 (0.74–2.46)
	51–60 years	22	24	0.13	1.64 (0.85–3.16)
Marital Status	Married	75	108	0.07	2.08 (0.92–4.68)
	Unmarried	9	27	0.075	0.48 (0.21–1.07)
Body Mass Index (BMI)	Underweight	0	2	0.45	0.31 (0.01–6.66)
	Normal weight	12	36	0.13	0.45 (0.22–0.94)

	(17.5–22.99)				
	Overweight (23–27.99)	58	90	0.01	1.11 (0.62–2.00)
	Obese (>28)	14	7	0.00	3.65 (1.41–9.48)
Socioeconomic Status	Upper class (26–29)	4	7	0.88	0.91 (0.25–3.22)
	Upper middle class (16–25)	25	31	0.26	1.42 (0.76–2.63)
	Middle class (11–15)	42	77	0.30	0.75 (0.43–1.30)
	Lower middle class (5–10)	13	20	0.89	1.05 (0.49–2.24)
	Lower class (<5)	0	0	0.81	1.60 (0.03–81.58)
Attained Menopause	Yes	18	19	0.16	1.66 (0.81–3.39)
	No	66	116	0.16	0.60 (0.29–1.22)
Number of Pregnancies	0	9	28	0.05	0.45 (0.20–1.02)
	1	4	20	0.02	0.28 (0.09–0.87)
	2	24	59	0.02	0.51 (0.28-0.92)
	3	31	18	0.00	3.80 (1.95–7.39)
	More than 3	16	10	0.01	2.94 (1.26–6.83)
Mode of Delivery	None	9	28	0.05	0.45 (0.20–1.02)
	Vaginal	45	51	0.02	1.90 (1.09-1.30)
	Caesarean	12	39	0.01	0.41 (0.20–0.83)
	Vaginal + Vacuum	6	3	0.09	3.38 (0.82–13.91)
	Vaginal + Caesarean	12	7	0.02	3.04 (1.14–8.08)
Labour Duration	None	9	28	0.05	0.45 (0.20–1.02)
	<3 hours	15	17	0.28	1.50 (0.70–3.21)
	3–6 hours	26	41	0.92	1.02 (0.56–1.85)
	6–24 hours	27	36	0.04	1.30 (0.71–2.36)
	>24 hours	7	13	0.74	0.85 (0.32–2.23)
Caffeine Intake	Yes	75	119	0.00	1.12 (0.47–2.66)
	No	9	16	0.00	0.89 (0.37–2.12)
Urinary Tract Infection	Yes	52	64	0.03	1.80 (1.03–3.14)
	No	32	71	0.03	0.55 (0.31–0.96)
Prescribed Medication	None	65	98	0.43	1.29 (0.68–2.43)
	Diuretics	4	6	0.91	1.07 (0.29–3.92)
	Anti-hypertensive	14	28	0.45	0.76 (0.37–1.55)
	Anti-psychotics	1	1	0.73	1.61 (0.09–26.16)
	Sedatives	2	0	0.17	8.21 (0.38–173.18)

Bivariate analysis showed that obesity (p=0.0077), multiple pregnancies (especially three or more, p=0.0001 and p=0.0122), and vaginal or mixed-mode deliveries (p=0.0227 and p=0.0252) were significantly associated with SUI. Significant links were also found with urinary tract infections (p=0.0374) and caffeine intake (p=0.0069). Although menopause and labour duration showed

trends, they were not statistically significant. These findings highlight the role of modifiable lifestyle and obstetric factors in SUI risk.

Table 4 - Association Between Risk Factors and Physical Activity Level with Stress Urinary Incontinence

Variables	Category	Low Physical Activity (n=136)	High Physical Activity (n=83)	OR (95% CI)	p-value
Age	18–30 years	26	25	0.54 (0.29–1.03)	0.06
	31–40 years	36	24	0.88 (0.48–1.62)	0.69
	41–50 years	40	22	1.15 (0.62–2.12)	0.04
	51–60 years	34	12	1.972(0.95–4.07)	0.06
Marital Status	Married	118	65	1.81 (0.88–3.72)	0.10
	Unmarried	18	18	0.55 (0.26–1.13)	0.10
Body Mass Index (BMI)	Underweight	2	0	3.10 (0.14–65.45)	0.46
	Normal (17.5–22.99)	31	17	1.14 (0.58–2.23)	0.68
	Overweight (23–27.99)	89	59	0.77 (0.42–1.39)	0.03
	Obese (>28)	14	7	1.24 (0.48–3.22)	0.65
Socioeconomic Status	Upper class (26–29)	3	8	0.21 (0.05–0.82)	0.24
	Upper middle (16–25)	39	17	1.56 (0.81–2.98)	0.17
	Middle (11–15)	74	45	1.00 (0.58–1.74)	0.97
	Lower middle (5–10)	20	13	0.92 (0.43–1.98)	0.84
	Lower (<5)	0	0	0.61 (0.01–31.12)	0.80
Attained Menopause	Yes	28	9	2.13 (0.95–4.77)	0.06
	No	108	74	0.46 (0.20–1.05)	0.06
Number of Pregnancies	0	19	18	0.58 (0.28–1.19)	0.14
	1	13	11	0.69 (0.29–1.62)	0.39
	2	46	37	0.63 (0.36–1.11)	0.11
	3	39	10	2.93 (1.37–6.26)	0.05
	>3	19	7	1.76 (0.70–4.39)	0.22
Mode of Delivery	None	19	18	0.58 (0.28–1.19)	0.14
	Vaginal	68	28	1.96 (1.11–3.45)	0.19
	Caesarean	26	25	0.54 (0.29–1.03)	0.06
	Vaginal + Vacuum	11	5	1.37 (0.45–4.10)	0.57
	Vaginal + Caesarean	12	7	1.05 (0.39–2.78)	0.92
Labour Duration	None	19	18	0.58 (0.28–1.19)	0.14
	<3 hours	16	16	0.55 (0.26–1.18)	0.13
	3–6 hours	47	20	1.66 (0.89–3.07)	0.10
	6–24 hours	43	20	1.45 (0.78–2.70)	0.23
	>24 hours	11	9	0.72 (0.28–1.82)	0.49
Caffeine Intake	Yes	121	73	1.10 (0.47–2.58)	0.81
	No	15	10	0.90 (0.38–2.11)	0.81
Urinary Tract Infection	Yes	69	47	0.78 (0.45–1.36)	0.03
	No	67	36	1.26 (0.73–2.19)	0.03
Prescribed Medication	None	100	63	0.88 (0.46–1.65)	0.69
	Diuretics	7	3	1.44 (0.36–5.75)	0.60

	Anti-hypertensive	28	14	1.29 (0.63–2.63)	0.47
	Anti-psychotics	0	2	0.11 (0.00–2.51)	0.17
	Sedatives	1	1	0.60 (0.03–9.84)	0.72

Low physical activity was more common among participants aged 41–50 years (p=0.0435), those who were overweight (p=0.0387), and those with a history of urinary tract infections (p=0.0397). Three pregnancies showed a trend toward significance (p=0.054). Although menopause, labour duration, and delivery mode showed some associations, they were not statistically significant. Overall, low physical activity correlated with demographic and health factors linked to higher SUI risk.

Table 5: Odds Ratios Based On UDI-6 And IPAQ Scores

Variable	Category	OR (95% CI)	p-value	Variable	Category	OR (95% CI)	p-value
UDI-6	Low urinary distress	2.12 (1.18–3.82)	0.01	IPAQ	Low physical activity	2.12 (1.18–3.82)	0.01
	High urinary distress	0.47 (0.26–0.84)	0.01		High physical activity	0.47 (0.26–0.86)	0.01

Women with high urinary distress and low physical activity levels had significantly higher odds of experiencing SUI.

Table 6- Correlation Of Stress Urinary Incontinence (UDI-6) With Physical Activity(IPAQ)

Group	N	UDI-6 Mean (SD)	IPAQ Mean (SD)	Pearson's r	p-value
Low physical activity	136	34.91 (±15.97)	429.38 (±109.76)	0.4395	0.00001
High physical activity	83	29.00 (±14.01)	1325.15 (±264.37)	0.3051	0.05

UDI – Urinary Distress Inventory, IPAQ – International Physical Activity Questionnaire

A moderate negative correlation was found between physical activity and urinary distress scores, with higher activity associated with reduced symptoms, suggesting a protective effect against urinary incontinence.

RESULT

Of the 219 females, 84 (38%) were diagnosed with SUI, with the highest prevalence in the 41–50 age group. The mean age and BMI were 40.04±11.23 years and 24.73±2.92 overall, and 42.26±10.57 years and 25.85±2.52 among those with SUI. SUI was significantly associated with age, BMI, parity, vaginal birth, prolonged labor, caffeine intake, and urinary tract infection ($p<0.05$). Chi-square analysis showed physical activity decreased significantly with age (p=0.0026). Bivariate and multivariate analyses revealed that low physical activity levels were associated with increased SUI symptoms. Pearson's correlation indicated a significant positive correlation between UDI-6 scores and physical activity levels (r=0.4395, p=0.00001).

DISCUSSION

The current study included 219 females aged 18–60, with 38% (n=84) reporting stress urinary incontinence (SUI). This aligns with findings by Retasha Soni et al. (2023), who observed a 43% incidence in Punjab, and a lower 22% prevalence in Uttar Pradesh by B.K. Agarwal et al. (2017), which could be attributed to regional differences in healthcare, lifestyle, and awareness of urinary health [3, 16]. Differences in study designs, population profiles, and data collection methods may also influence regional variations in prevalence.

The baseline characteristics in this study reveal several key contributors to stress urinary incontinence (SUI), which may be

linked to lower quality of life and decreased physical activity levels. The majority of participants were aged between 31 and 50 years (55.31%), a group often associated with pelvic floor weakening due to age-related hormonal and muscular changes. A significant proportion were overweight (67.58%) or obese (9.50%), and higher BMI is a well-established risk factor for SUI due to increased intra-abdominal pressure.

Additionally, 83.56% of the participants were married, and among them, many had experienced pregnancies—37.89% had two, and 22.37% had three pregnancies—leading to possible pelvic floor strain. Vaginal delivery was reported by 43.83%, with 7.30% undergoing vacuum-assisted vaginal delivery and 8.67% having both vaginal and caesarean deliveries, which further increase the risk of pelvic trauma. Around 30.59% had a labor duration of 3–6 hours, while 28.76% reported 6–24 hours, both of which can contribute to pelvic floor dysfunction.

Moreover, 88.58% consumed caffeine, and 52.96% had a history of urinary tract infections—both potential irritants that can exacerbate urinary symptoms. Notably, 38.36% of the women reported SUI, which likely impacted their physical activity levels, as reflected in the bivariate analysis: women with high urinary distress were significantly less likely to engage in physical activity (OR: 0.47, 95% CI: 0.26–0.86, p=0.01), while those with low distress were more likely to remain active (OR: 2.12, 95% CI: 1.18–3.82, p=0.01). These associations suggest that demographic and obstetric factors collectively influence urinary symptoms, which in turn contribute to reduced physical activity and lower perceived quality of life.

The age group most affected was 41–50 years, consistent with Mahtab Z et al. (2019), who identified the 41–45 years age group as the most common for SUI. Aging contributes to SUI due to factors like fewer striated muscle cells in the urethral sphincter, decreased pelvic floor muscle tone, and detrusor muscle activity. Other factors include low estrogen levels, vaginal surgeries, neurological conditions, early childbearing, and reproductive immaturity, which are often influenced by cultural practices (Bodhare TN et al., 2010) [17,18].

The Chi-square test revealed a significant correlation between age and physical activity levels ($P<0.05$), supporting Milanovic Z et al. (2013) that aging impairs physical fitness, including VO_2 max, muscle strength, and endurance. However, moderate physical activity can maintain function and quality of life for older adults [19]. Pelvic floor muscle training (PFMT) is particularly effective across age groups in reducing SUI severity and improving continence, as demonstrated by randomized controlled trials [11].

BMI also emerged as a significant factor, with 67.58% of cases being overweight and a mean BMI of 25.85 among those with severe SUI. Literature frequently links higher BMI with increased SUI risk, as excessive intra-abdominal pressure may exceed the urethral closing pressure, leading to leakage. A strong correlation between BMI and physical activity was also observed ($P=0.0387$), highlighting the effects of sedentary lifestyles on muscle mass and body fat. Janiszewski PM (2017) defines a sedentary lifestyle as walking fewer than 5,000 steps per day [20]. Furthermore, weight loss through dietary intervention and exercise has shown significant improvements in continence, especially among overweight women.

Using the modified Kuppuswamy scale to measure socioeconomic status (SES), middle-class women had the highest SUI prevalence (44%). Underreporting in lower SES groups may stem from lack of healthcare access and cultural stigma, especially in rural areas, indicating the need for proactive screening in basic healthcare settings. Women from lower SES often suffer more severely due to delayed reporting and limited awareness of pelvic health programs.

The study assessed parity, delivery method, and labor time using UDI-6 and IPAQ scores. UDI-6 scores correlated significantly

with the number of pregnancies, particularly vaginal births, but IPAQ scores did not. Vaginal delivery, especially with second-degree perineal tears or prolonged labor, increases SUI risk. Prevalence was higher in women who had vaginal births (26.84%) compared to those who had cesarean sections (8.59%) or were nulliparous (9.42%). Similar findings were reported by Singh U et al. (2020), who observed that multiple vaginal births elevate pelvic floor dysfunction [21].

UTIs were linked to more severe SUI, creating a cycle where UI increases UTI risk due to urine stasis, and recurrent UTIs impair the bladder wall and sphincter function. Caffeine consumption, although not correlated with IPAQ scores, was significantly associated with higher UDI-6 scores ($P<0.05$), as caffeine's diuretic effect can worsen SUI symptoms by increasing urgency and bladder dysfunction. [6,7]

Low physical activity levels were strongly correlated with SUI severity ($P<0.05$). Women with SUI often avoid physical activity due to fear of leakage, leading to reduced health outcomes, social disengagement, and a decline in quality of life (QoL). A weak link between high physical activity and severe SUI suggests that not all physically active women are immune to UI, but exercise remains vital for symptom management and prevention, particularly pelvic floor strengthening. [13]

In conclusion, age, BMI, socioeconomic status, childbearing history, UTI, caffeine consumption, and physical activity levels all influence SUI. Lifestyle changes, awareness, and early screening are crucial for effective management and improving women's health and QoL. [8,21]

CONCLUSION

According to this study, physical activity levels significantly decline with age. Women who experience stress urine incontinence eventually have reduced levels of physical activity, aerobic capacity, skeletal muscle mass, and Vo2 Max. This ultimately results in decreased urethral muscle tone and pelvic floor muscular strength, which causes urinary distress.

Declaration by Authors

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