

Changes as the Body Ages

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Plastic Surgical Nursing (PSN), the official journal of the International Society of Plastic and Aesthetic Nurses (ISPAN), is introducing this new column to provide information about fundamental best practices for aesthetic nurses.

As the body ages, outward signs of aging that individuals can see in the mirror include gray hair, wrinkled skin, and an expanding waistline. The speed at which these age-related changes occur is unique to the individual. In some cases, changes associated with aging occur gradually, and in other cases, they seem to occur overnight. Some individuals experience these changes in young adulthood, whereas other individuals do not experience them until middle or old age. Understanding the physical changes that occur as the body ages is fundamental for aesthetic nurses. This column will explain these changes.

CHANGES IN THE SKIN

As an individual ages, their skin begins to wrinkle. Wrinkling of the skin is a complex, four-step process (Robert, Labat-Robert, & Robert, 2012). In the first step, skin cells are lost and the outer layer of skin becomes thin and fragile (Robert et al., 2012). In the second step, the collagen fibers that make up the connective tissue lose their flexibility (Robert et al., 2012). This makes the skin less able to retain its shape (Robert et al., 2012). In the third step, elastic fibers in the middle layer of the skin lose their ability to keep the skin tightly stretched, resulting in skin sagging (Robert et al., 2012). In the final step, the underlying layer of fat diminishes, reducing the amount of skin padding that smooths out the contours of the skin (Robert et al., 2012). Two major causes of skin wrinkles are smok-

ing and exposure to ultraviolet rays from the sun (Mayo Clinic, 2020). Smoking restricts blood flow to the skin and sun exposure breaks down the skin's connective tissue (Mayo Clinic, 2020). Repeated facial movements and expressions, such as squinting or smiling, can also lead to fine lines and wrinkles (Mayo Clinic, 2020).

Compared with the skin of a young adult, an older adult's skin is thinner and drier and may have a leathery texture that makes the skin less effective at regulating heat or cold (Robert et al., 2012). The older adult's skin is also more susceptible to cuts, bruises, and blisters (Robert et al., 2012). In addition, age spots (i.e., areas of dark pigmentation that look like freckles) and moles (i.e., pigmented outgrowths) appear (Aldwin & Gilmer, 2013; Weiss, Munavalli, Choudhary, Leiva, & Nouri, 2012). Some of the blood vessels in an older adult's skin may become dilated and create small, irregular red lines (Aldwin & Gilmer, 2013; Weiss et al., 2012). Varicose veins may also appear as knotty, bluish irregularities in the blood vessels, especially on the legs (Aldwin & Gilmer, 2013; Weiss et al., 2012).

CHANGES IN THE HAIR

As an individual ages, their hair may gradually turn gray. The hair may also begin to fall out, resulting in thinning hair, bald patches, or complete baldness. There are vast individual differences in the amount and speed with which these changes occur (Aldwin & Gilmer, 2013). Graying of the hair results from a cessation of pigment production (Aldwin & Gilmer, 2013). Hair loss is caused by the destruction of the germ centers that produce hair follicles (Aldwin & Gilmer, 2013). In most cases, although they may lose the hair on their head as they age, men do not lose facial hair (Aldwin & Gilmer, 2013). Men may also develop bushy eyebrows and begin to grow hair inside their ears (Aldwin & Gilmer, 2013). Hormonal changes associated with aging may cause women to develop patches of hair on their face, especially on the chin (Aldwin & Gilmer, 2013).

CHANGES IN THE VOICE

Compared with the full and resonant sound of a younger adult's voice, as an individual ages, their voice tends to become thinner or weaker (Cavanaugh & Blanchard-Fields,

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2015). Age-related changes to the voice also include lowered pitch, increased breathlessness, trembling speech, slower and less precise pronunciation, and decreased volume (Cavanaugh & Blanchard-Fields, 2015). These changes may be the result of age-related changes in the larynx, respiratory system, and muscles that control speech (Cavanaugh & Blanchard-Fields, 2015).

CHANGES IN VISION

In addition to the appearance of wrinkles and gray hair, change in vision is usually one of the first noticeable signs of aging (Cavanaugh & Blanchard-Fields, 2015). Vision is important for every aspect of life; therefore, age-related changes in vision may have profound effects on aging individuals, and may even lead to feelings of sadness and loss of enjoyment of life (Mojon-Azzi, Sousa-Poza, & Mojon, 2008).

Two major kinds of age-related changes occur in the eye. One change is a decrease in the amount of light that passes through the eye (Andersen, 2012). This change results in the older individual needing increased amounts of light to complete tasks such as reading and writing compared with young adults (Andersen, 2012). Because they may not see clearly in the dark, some older adults do not like to go out at night (Cavanaugh & Blanchard-Fields, 2015). Older adults may be extremely sensitive to glare and there is a decline in an older adult's adaptation (i.e., the time it takes for the eyes to adjust to changes in light) (Cavanaugh & Blanchard-Fields, 2015). This change is important for older adults who are driving, because they may have more difficulty seeing clearly after looking at the headlights of an oncoming car (Cavanaugh & Blanchard-Fields, 2015).

Another change that occurs in the eyes as an individual grows older is that the crystal-clear lens of the eye begins to turn yellow (Andersen, 2012; Charman, 2008). This leads to a decrease in the ability to discriminate between colors in the green–blue–violet area of the color spectrum (Andersen, 2012; Charman, 2008). The muscles surrounding the lens stiffen with age, decreasing the ability of the lens to adjust and focus on objects that are near to the eye (Andersen, 2012; Charman, 2008). It is this change that leads to presbyopia, or far-sightedness in older individuals (Andersen, 2012; Charman, 2008). Opaque spots, known as cataracts, may develop on the lens, limiting the amount of light that is transmitted to the eye (Cavanaugh & Blanchard-Fields, 2015). Additionally, the fluid in the eye may not drain sufficiently, leading to increased intraocular pressure and glaucoma (Cavanaugh & Blanchard-Fields, 2015).

CHANGES IN HEARING

Age-related changes in hearing can lead to a reduced sensitivity to high-pitched sounds known as

presbycusis (Agrawal, Platz, & Niparko, 2008). Presbycusis results from atrophy and degeneration of the receptor cells or auditory nerve, or obstruction or damage to the vibrating structures in the outer or middle ear (Punnoose, Lynn, & Golub, 2012). By age 70, approximately 50% of older adults have presbycusis (Agrawal et al., 2008). Because hearing plays such a major role in communication, a progressive loss of hearing can negatively affect the individual's quality of life and put a strain on their interpersonal relationships (Heyl & Wahl, 2012). Loss of hearing can lead to a loss of independence, social isolation, and depression (Cavanaugh & Blanchard-Fields, 2015).

CHANGES IN TASTE AND SMELL

The number of taste cells does not change across the life span (Imoscopi, Inelmen, Segi, Miotto, & Manzato, 2012). As an individual ages, the ability to detect different tastes declines gradually (Bitnes, Martens, Ueland, & Martens, 2007). The amount of decline and the flavors that are affected vary greatly from person to person (Bitnes et al., 2007).

The ability to detect odors remains fairly intact until an individual reaches approximately age 60, when their sense of smell begins to decline. However, there are wide variations across people in the types of odors that are affected and amount of decline (Nordin, 2012).

CHANGES IN THE MUSCLES

Although the amount of muscle tissue declines with age, even at age 70, for most individuals, the loss of strength and endurance is no more than 20% (Cavanaugh & Blanchard-Fields, 2015). By age 80, the loss of strength increases to 40%, and is generally most severe in the legs (Cavanaugh & Blanchard-Fields, 2015). Some individuals retain their strength well into old age (Seene, Kaasik, & Riso, 2012). Muscle endurance also decreases with age, but at a slower rate (Cavanaugh & Blanchard-Fields, 2015). Men and women do not differ in their rate of muscle tissue change (Cavanaugh & Blanchard-Fields, 2015). Notably, as muscle strength and endurance decreases, the potential for problems with balance, walking, and falls increases (El Haber, Erbas, Hill, & Wark, 2008).

CHANGES IN THE JOINTS

Beginning at approximately age 20, the protective cartilage in an individual's joints deteriorates by thinning, cracking, and fraying leading to osteoarthritis (Cavanaugh & Blanchard-Fields, 2015). Osteoarthritis usually becomes noticeable in late middle or early old age and is especially common in individuals whose joints have been subjected

to overuse and abuse (e.g., athletes and manual laborers) (Cavanaugh & Blanchard-Fields, 2015). Osteoarthritis most often affects the joints of the hands, spine, hips, and knees (Cavanaugh & Blanchard-Fields, 2015).

CHANGES IN THE BONES

Normal aging is accompanied by a loss of bone tissue throughout the body. This bone loss begins at approximately age 30, accelerates at age 50, and slows at age 70 (Halvadar et al., 2012). Women lose bone mass almost twice as fast as men (Cavanaugh & Blanchard-Fields, 2015). This is because, beginning in young adulthood, women have less bone mass than men, and the depletion of estrogen that occurs in menopause increases bone loss and leads to osteoporosis (Cavanaugh & Blanchard-Fields, 2015). As the body ages, the bones become more hollow and porous, which makes them brittle and easy to fracture (Cavanaugh & Blanchard-Fields, 2015). These changes also create the stooping posture commonly seen in older people with advanced osteoporosis (Touhy & Jett, 2012).

CHANGES IN HEIGHT AND WEIGHT

As individuals age, they experience a decrease in height and fluctuations in weight (Havaldar, Pilli, & Putti, 2012). In most cases, an individual's height remains fairly stable until age 50 (Havaldar et al., 2012). Between approximately age 55 and age 75, men lose almost 1 inch in height and women lose almost 2 inches in height (Havaldar et al., 2012). This is due to spinal compression from age-related loss of bone strength, changes in the vertebral discs, and changes in posture (Havaldar et al., 2012). Notably, a loss of 1.2 inches or more is associated with an increased risk of death from cardiovascular or respiratory diseases (Masunari et al., 2012).

Weight gain is common in middle age and is generally followed by weight loss in old age (Cavanaugh & Blanchard-Fields, 2015). The weight gain is caused by a slowing body metabolism, reduced levels of exercise, reduced numbers in daily caloric requirements, and a failure to adjust food intake (Cavanaugh & Blanchard-Fields, 2015). In men, the weight gain tends to be around the abdomen, resulting in an "apple-shaped" figure (Cavanaugh & Blanchard-Fields, 2015). In women, the weight gain tends to be around the hips, resulting in a "pear-shaped" figure (Cavanaugh & Blanchard-Fields, 2015). As an individual ages, however, they lose muscle, bone, and fat (Yang, Bishai, & Harman, 2008). Muscle and bone weigh more than fat (Yang et al., 2008). Older adults who have normal body weight at age 65 have longer life expectancy and lower rates of disability than 65-year-olds who are underweight or overweight (Cavanaugh & Blanchard-Fields, 2015).

Why do some individuals stay healthy, active, and attractive well into middle and old age whereas others experience significant physical decline? Throughout the ages, many great minds have pondered this question, and the solution to retaining a youthful appearance continues to be explored. When it comes to preventing, reducing, or even erasing the signs of aging, aesthetic nurses are the experts.

If you are an aesthetic nurse and would like to write about an issue of fundamental importance to aesthetic nurses, or if you would like to see your issue presented in a future *Fundamentals of Aesthetic Nursing Practice* column of PSN, please contact Sharon Ann Van Wicklin, Editor-in-Chief, PSN, at sharonvwrn@ispan.org.

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