# PERCEIVED CONTROL OF PHYSICAL AGEING

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Marie Elizabeth Saywell

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# ABSTRACT

The central purpose of the study was to look at perceived control of the physical ageing process. The extent to which the people believe that physical ageing is controllable was investigated. Use of strategies and technological aids was also explored, to gain a picture of what specific things people intend to do (or have already done) to help control the physical ageing process. The study also looked at the importance of various information and support sources, and at peoples faith in technological advances to solve problems of physical ageing. The sample consisted of university students and members of community groups. Participants were 174 adults aged between 18 and 86 years of age. Fifty eight percent of the study population was male. Participants completed a questionnaire developed by the researcher. They indicated that they believed that people in general have low levels of control over the majority of changes associated with physical ageing and that people should generally accept the changes. No relationship was found between age and perceived control. Participants indicated a willingness to use a wide range of aids and strategies to help control the physical ageing process. There was no relationship found between perceived control and intended aid or strategy use. Participants indicated that all the sources of social support and most of the sources of information listed in the questionnaire could be helpful. Several additional information sources were also suggested. A moderate level of confidence was expressed in technological advancement. The implications and limitations of the study are discussed. Possible future research directions are also discussed.

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# Chapter One – Introduction

Researchers have become increasingly interested in understanding the process of physical ageing. The main reasons for this interest include the ageing population and the implications it has on government spending in areas such as health. Psychologists can contribute to the field through studying such topics as people's sense of control over physical ageing, the focus of this study.

Over the last 50 years New Zealand's population structure has changed dramatically. According to Statistics New Zealand (2001) New Zealand's population is growing older with increasing speed. One of the biggest changes that is occurring is the rising percentage of New Zealanders aged 65 plus. Statistics show that during the last 50 years the number of New Zealanders over the age of 65 has doubled, and this growth is expected to continue over the next 100 years (Statistics New Zealand, 2001). This trend is by no means restricted to New Zealand's population. Figures have revealed similar trends in a number of different countries, including Australia, North America and Japan (Heenan, 1993). Statistics show that in 1993, 10 of Europe's countries had fewer children aged under 14 than people who were aged 60 and over (Heenan).

As well as the growing percentage of people aged over 65, the number of people reaching 75 plus is increasing (see Figure1.1) and this trend is expected to continue. The increases in life expectancy are attributed

to lower mortality rates in older working and retired people. According to Statistics New Zealand (2001) New Zealand's population structure is predicted to continue to age, with the median population age expected to reach 45 years by 2051.

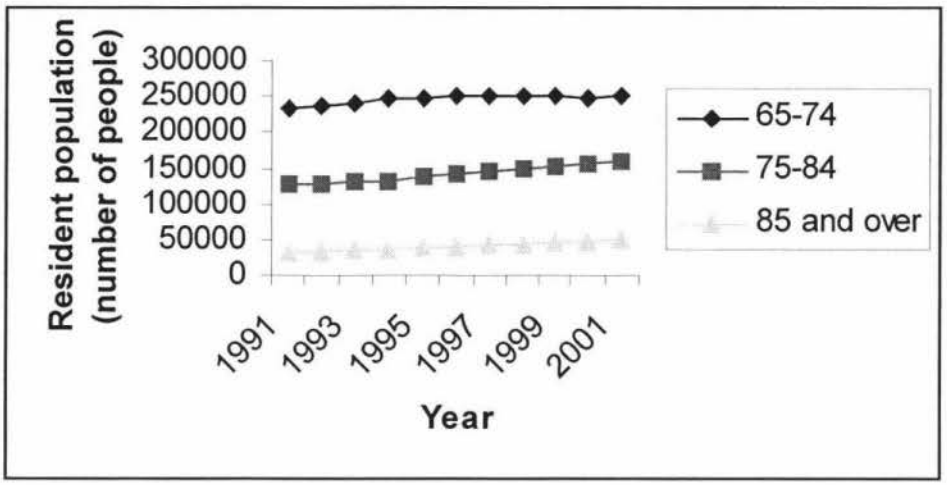


**Figure 1.1. Number of New Zealand residents aged 65 years and over between the years of 1991-2001 (Data taken from Statistics New Zealand, 2001)**

Societal attitudes towards older people are changing. Older New Zealanders are expected to remain active in the work force, be healthier and have more skills and a better education than those individuals of the same age 50 years ago (Ministry of Social Policy, 2001). The emerging view that older people should be more self-sufficient is important because as the population increases so does the cost to society to provide care for the individuals who find it difficult to care for themselves. The biggest debate in this area focuses on the major increases in the cost of health care and retirement income (Ministry of Social Policy).

The growing debate surrounding health care and retirement income has meant that the government is now spending an increasing amount of time looking at polices specifically aimed at the issues that affect older New Zealanders. One of the most recent government initiatives is known as 'The Positive Ageing Strategy' (PAS). The PAS provides a blueprint for government agencies to guide polices. It aims to empower older people, by encouraging people to recognize the diversity of the older population. The PAS also aims to enable the older individual to take more personal responsibility for the changes that are affecting them (Ministry of Social Policy, 2001).

In order to enable people to take more responsibility for the changes that are taking place around them and within their bodies, it is important that the individual believes that they have some form of control over these changes. Research has shown that individuals who believe they have control over the changes that occur during the life span are more likely to attempt to influence the outcomes that are associated with the changes (Skinner, 1996).

This study looks at several aspects of the perceived control of physical ageing. This topic is important partly because many of the health problems of older New Zealanders can be directly associated with the changes that occur as the human body ages.

The health problems associated with ageing can manifest themselves in a number of ways. Some problems can be controlled by various aids, for

example people with hearing deficits can wear hearing aids and people with mobility problems can use walking sticks and frames. Although deficits can be managed they can still have an impact on everyday life. Serious eyesight deficits may mean the individual can no longer drive a vehicle, leaving them reliant on public transport or friends and relations to transport them to places they need to go. Serious medical problems can develop during the ageing process. These conditions can have a devastating effect on the individual and the people around them. A number of age-related medical conditions can be minimised, but it is partly up to the individual to achieve this. For example the likelihood of developing osteoporosis or hypertension can be decreased through diet, exercise and healthy lifestyle choices. However, as stated above individuals who believe they have little or no control over their physical ageing will do little to try and prevent such problems. It is important that people believe that they have some level of control over their bodies so they can take steps to minimise the effect the ageing process is going to have on them.

The rest of this chapter is spilt into four sections. The first section gives a broad overview of aspects of the physical ageing process. The second section looks at perceived control and its benefits. The third section looks at the limitations of the previous research in this area. Finally the fourth section looks at the study's research goals and hypotheses.

## PHYSICAL AGEING

The physical ageing process can be broken down into two processes, known as primary (or normal) and secondary (or pathological) ageing. Primary ageing refers to the gradual, disease free, changes that are inevitable in the ageing process (Cavanaugh, 1997; Hoyer, Rybash & Roodin, 1999). These changes occur naturally with age and include such changes as the menopause and eyesight decreases. Secondary ageing refers to the changes that are related to environmental and lifestyle factors, for example, intense exposure to environmental toxins, unhealthy diets and the consequences of disease (Hoyer, Rybash & Roodin). It is often difficult to distinguish between primary and secondary ageing, and many changes once thought to be primary are now thought to be at least partially secondary. Both primary and secondary changes affect a number of different systems within the human body.

All five human senses undergo dramatic changes during the later years of life. Although most of these changes are gradual the end result can be quite frightening. Vision is greatly affected by the ageing process, as an individual ages a number of changes occur. The ability to focus eyes on a moving object diminishes, and near vision also decreases making it harder for people to read small print (Papalia, Sterns, Feldman & Camp, 2002; Schaie & Willis, 1991). Light sensitivity also decreases, along with the ability to distinguish detail, the ability to locate signs and other items, and visual processing speed (Papalia et al.; Schaie and Willis). Secondary ageing

processes also affect a person's vision, for example diseases such as glaucoma, cataracts, and senile macular degeneration can all lead to blindness in extreme cases; this is unfortunate because with early detection and treatment, the course of the disease can often be slowed down or halted (Papalia et al.). Simple preventative steps can be taken to protect eyes from premature damage, for example the use of sunglasses and regular eye examinations. Glasses can also be worn to help prevent further deterioration of eyesight, and to help minimise the effects that vision deficits have on everyday living.

Hearing declines slowly in adulthood. The most noticeable change is the loss in ability to hear high pitched noises; this hearing loss is known as presbycusis (Papalia et al., 2002; Schaie & Willis, 1991). Secondary ageing processes, for example viral infections and illnesses such as pneumonia, can lead to deafness in old age if not treated quickly (Papalia et al.; Schaie, & Willis). Exposure to loud noise is an important contributor to hearing loss (Papalia et al.). People can protect their hearing in a number of ways including wearing earmuffs when working with large machinery and refraining from listening to loud music.

An individual's sense of smell and the ability to distinguish between different flavours declines. Decreases in taste do not appear to be entirely due to a decreased numbers of taste buds. It is thought that age decreases in smell may contribute to the diminished ability to distinguish between different flavours as we age (Cavanaugh, 1997). As smell plays an important

role in people's enjoyment of their food this is thought to be linked to reports that food does not taste as good as it used to,

Changes in balance occur as people age. Older people are more prone to dizziness and vertigo (Cavanaugh, 1997). Dizziness is the feeling of being unsteady on one's feet and vertigo is a whirling sensation that can lead to a loss of balance (Cavanaugh). Both of these sensations can cause falls which can be very serious in older individuals. These two conditions coupled with increased levels of body sway can have life-threatening implications for those individuals over the age of 75, as these falls could lead to serious injuries such as broken hips, which can in turn lead to pneumonia. Although changes in balance cannot be avoided in old age, people can take steps to help minimise the effects this can have. Research has shown that tai chi helped older adults improve their balance as well as lowering the fear of falling (Cavanaugh & Blanchard-Fields, 2002). Older people may use walking sticks and frames to help them get around better. Hand rails and other mobility aids may also be installed in homes to help prevent falls.

Reaction times increase with age. These increases differ between individuals and research has shown that the more complex a task is the longer it takes an older individual to respond to a task (Cavanaugh, 1997). This is especially important as slower reaction times mean that older adults may not be able to operate machinery, for example they may be unable to drive their car making them reliant on others to drive them around (Cavanaugh) thus decreasing the person's sense of independence.

As people grow older the body's muscle tissue declines (Cavanaugh, 1997), these changes are barely noticeable up till approximately age seventy when tissue declines about 20 per cent. Levels of muscle tissue decline can be dramatically reduced by regular exercise throughout the life-span (Papalia et al., 2002). There are also changes taking place in the body's skeletal structures. The cartilage covering bones tends to deteriorate, bones lose some of their density and in extreme cases can become brittle and thin (Cavanaugh, 1997; Papalia et al., 2002). Cartilage deterioration can lead to osteoarthritis. Arthritis can be very disabling and cause swelling or inflammation around the joints making movement very uncomfortable or even impossible (Cavanaugh).

A serious bone disease known as osteoporosis occurs when bones lose density at an alarming rate resulting in porous bones that are easily broken. This disease is especially common in women because they have less bone density than men but lose bone density more quickly, due to the depletion of oestrogen during menopause (Cavanaugh). The chances of developing osteoporosis can be decreased by a number of lifestyle changes these include; not smoking, limited alcohol consumption, a diet rich in calcium and vitamin D, no caffeine and regular weight-bearing exercise (Craven & Hirnle, 2000).

The cardiovascular system undergoes changes during the ageing process. The heart's ability to pump blood in times of stress may decline, and a gradual increase in blood pressure may occur (Papalia et al., 2002).

"Blood pressure is the ratio of systolic pressure (the pressure during the contraction phase of a heartbeat) to the diastolic pressure (the pressure during the relaxation phase)" (Cavanaugh, 1997, p.83). The ventricles are responsible for this pressure by pushing the blood through the body. As people get older structural changes in the cardiovascular system mean that generally blood pressure increases (Cavanaugh). High blood pressure can be prevented or controlled by a low salt, low fat diet, no caffeine, not smoking and regular moderate exercise (Craven & Hirnle, 2000).

The most noticeable aspect of the human ageing process is the changes to a person's physical appearance. A person's skin gradually becomes thinner and wrinkles and age spots begin to appear. Protective measures such as avoiding the sun's ultra violet rays, using sunscreen use (Detweiler, Bedell, Salovey, Pronin & Rothman, 1999) and skin creams containing alpha hydroxy acid can help prevent premature skin damage (Papalia et al., 2002). Connective tissues start to lose their flexibility and the layer of fat under the skin diminishes (Cavanaugh, 1997). Hair gradually thins and greys, and due to hormone changes women may develop patches of facial hair on their chin (Cavanaugh). Changes to body build also occur as people get older. In general people tend to gain weight between the ages of 20 and 60. In older age people tend to lose weight as muscle and bone mass declines (Cavanaugh).

Although the ageing process is a universal phenomenon, research has revealed that most people have little knowledge of this process. Palmore's

(1988) 'Facts on Aging Quiz' (FAQ) has been widely used; results show that with the original true/false format most people answer only slightly more than half the questions correctly. This finding is alarming as the law of averages states that participants should correctly guess at least 50 percent of the answers. A newer version of the FAQ has a multichoice format, however, the results found when using this format are comparative with those found with the true/false version (Palmore, 1998). Test results have not been found to vary between occupational groups, ethnicity or genders (Palmore, 1998). Surprisingly age does not seem to affect the results. Even though older people are currently passing through some of the changes that are looked at by the test, they have no more knowledge than the younger people. This lack of knowledge amongst individuals who are going through these changes is alarming. How can these individuals age successfully if they do not understand the changes taking place in their bodies?

The only variable that affects scores on the FAQ is level of education. As the level of education increases so does the level of knowledge (Palmore, 1998). This finding was validated by 25 studies that involved pre and post test administrations of the test after courses that involved learning about the ageing processes in later life. Analysis revealed that only four out of these 25 studies failed to show increases in knowledge (Palmore, 1988). Providing people with knowledge about the changes taking place in their body is important for two reasons. Firstly by gaining knowledge people will have a better understanding of the changes and they will have the information on

how to limit the effects of these changes. Secondly knowledge enhances a person's sense of personal control (Mirowsky & Ross, 1998). This enhancement of control is thought to motivate people to design and participate in a healthy lifestyle which will promote more successful ageing (Mirowsky & Ross).

## PERCEIVED CONTROL AND ITS BENEFITS

Although control has been found to be important in psychological functioning, agreement amongst researchers about the constructs used to measure the phenomenon is minimal (Skinner, 1995). Over the past forty years researchers have used a wide range of constructs to describe control, these include primary and secondary control (Schulz & Heckhausen, 1996), locus of control (Ryckman & Malikiosi, 1975), self efficacy (Bandura, 1997), and perceived control (Skinner, 1995). To add to the confusion surrounding the constructs of control many are used interchangeably. Terms such as perceived control are used to describe constructs that are very different (Skinner, 1996). For example Lang and Heckhausen (2001) describe perceived control as '... the extent to which individuals perceive themselves as agentic in producing ... outcomes' (p. 510). In contrast, Walker (2001) simply describes perceived control to be '... the extent to which an event is perceived to be under control' (p. 10). These two definitions are quite different, Walker's definition simply describes perceived control as an individual believing that an event is under control, while Lang and Heckhausen's definition involves the individual having personal control over

the situation. The use of such interchangeable constructs has caused a lot of confusion in control orientated research. This confusion could mean that researchers could conclude that research findings are opposing or inconsistent when in reality it is the definitions of the construct that are inconsistent rather than the findings themselves (Skinner, 1996).

While there is confusion surrounding the definition of control there are two basic underlying assumptions, the first is that control usually refers to the accomplishment of a desired goal (Walker, 2001). The second assumption relates to an individual's struggle to come to terms with their surrounding environment (Heckhausen & Schulz 1995; Skinner, 1995). Therefore, control can be defined as the interaction of the individual with his or her environment in a way that effectively enhances an individual's chance of obtaining desired outcomes while avoiding undesired outcomes.

The present study focuses on perceived control. In this study perceived control is defined as the extent to which an individual believes they can influence events and changes that occur in everyday life (Skinner, 1996). High perceived control means that an individual believes they have personal control over the situation, that what they do directly influences the outcome of that situation. How much control an individual feels they have over a situation can differ widely between different people in the same situation.

Decades of research have established that gaining a sense of control and maintaining it is an important aspect of human existence (Shapiro & Austin, 1990). Researchers have studied the effects control has over various

aspects of everyday functioning control. It has been found to be a predictor of mortality (Krause & Shaw, 2000), and to increase longevity and well-being in nursing home studies (Langer & Roodin, 1976; Schulz, 1976). Control has also been found to have positive effects on health (Campbell, Busby, Robertson & Horwath, 1995). Research by a New Zealand group found that individuals who perceived that they had higher levels of control over their health engaged in better health practices (Campbell et al., 1995).

Research, such as a series of three studies by Lang and Heckhausen (2001) suggests that a relationship exists between a person's level of perceived control and subjective well-being. The results suggest that people are happiest when they believe that they have the power to control the attainment of goals that are important to them.

A model proposed by Heckhausen (1997) splits control into primary and secondary control. Primary control allows individuals to mould their surrounding environment to better meet their developmental requirements. Secondary control refers mainly to cognitive processes within the individual, these processes direct actions towards attainable goals while directing actions away from impractical or impossible goals (Lackovic-Grgin, Grgin, Penezic & Soric, 2001). Primary and secondary control are believed to serve the two main requirements humans need to survive; the need to be selective and the ability to cope with the failures of life.

In Heckhausen and Schulz's (1995) model of primary and secondary control, primary control is the most functional form of control, with secondary

control providing protection for primary control's motivational resources. Through various protection mechanisms (for example goal restructuring) secondary control protects individuals against the emotional effects of failure and can also actively provide the necessary resources to restore primary control. Without these mechanisms individuals can become withdrawn and/or depressed.

Generally primary control serves as a "... regulatory mechanism..." (McConatha & Huba, 1999, p. 164) between an individual and the environment by attempting to shape or change the external world in order to fulfill their desires and needs. Primary control can be broken down into selective primary control and compensatory primary control. Selective primary control is the investment of cognitive and/or physical abilities to obtain a chosen goal (Schulz & Heckhausen, 1996). Whereas compensatory primary control is required when physical and/or cognitive processes fail (Schulz & Heckhausen). For example when an individual loses their natural ability to hear, they may use external hearing aids to regain some form of hearing.

Secondary control can be broken down into selective and compensatory aspects. Selective secondary control is involved with the internal processes that are needed for goal pursuit (Schulz & Heckhausen, 1996). Its main job is to either enhance the value of desired goals or to reduce the value of undesired goals (Schulz, & Heckhausen). Compensatory secondary control is aimed directly at minimising the effects of failure

(Heckhausen, 1997), this may take the form of goal restructuring or simply giving up and facing the fact that the goal is unattainable (Thompson et al., 1998).

Human beings are thought to be producers of their own development (Heckhausen, 1997). From the early stages of development through to late adulthood, individuals have some influence over their developmental course. It is thought that an individual's beliefs about development may act as a frame for behaviour and guide its future course (Markus & Nurius, 1986). How quickly people advance along the developmental course may be influenced by their beliefs surrounding the process.

Bandura (1997) explains that it is not enough for individuals to believe that they can influence outcomes through their thoughts or behaviours. Individuals will not attempt to control events unless they believe that they are capable of producing the desired outcome. When people perceive that they have control over their lives they put more effort into achieving their goals, they are more optimistic and are not deterred when faced with setbacks (Skinner, 1996). Whereas, individuals who have low levels of perceived control are more likely to retreat when difficulties arise (Skinner). Thus individuals with higher levels of perceived control are more likely to positively influence developmental outcomes than individuals with a low level of perceived control. How individuals react to the physical changes that occur throughout the life course is important because many illnesses and problems of old age are associated with physical ageing.

Researchers have studied adults' beliefs about psychological life course changes. Heckhausen, Dixon and Baltes (1989) looked at adults perceptions of aspects of personality, social, and intellectual functioning to assess whether adults' perceived themselves to be "... sensitive to developmental change..." (p 109). Heckhausen, Dixon and Baltes found that adults throughout the life span believe that psychological development is multi-directional, and that the ratio between perceived gains and losses shifts towards a less desirable ratio in later life. They also asked whether these changes were desirable and at what age they expected the changes to occur. The results showed that overall the adults agreed on a set of beliefs describing psychological development throughout adulthood. Later research expanded on these findings and discovered that there are lower levels of perceived control for less desirable changes (Heckhausen & Baltes, 1991).

Later research by Heckhausen (1997) found that as age increased people had less selective primary control over the developmental process and more compensatory secondary control. Longitudinal and laboratory research has shown that control beliefs do change as people age (Lachman & Leff, 1989; Lachman & McArther, 1986). Cross-sectional research suggests that once a person reaches their fifties levels of control start to drop (Nelson, 1993).

Although most research in the area of perceived control over developmental changes has focused on psychological constructs, Thompson et al. (1998) used people's beliefs about perceived control over physical

appearance to establish whether levels of primary or secondary control are related to lower levels of emotional distress. The study's results found that people who had higher levels of primary control had lower levels of emotional distress. They also found that acceptance (secondary control) was only adaptive when individuals had lower levels of primary control. Thus Thompson et al. concluded that it was beneficial for individuals to have some form of primary control over situations concerning them, even if levels of actual control are small. It was also concluded that acceptance is only beneficial when individuals believe that they have little control over their situations.

A broader understanding of perceived control of physical ageing can be gained by studying it in conjunction with the concept of social support. Social support can be defined in numerous ways. There are, however, underlying characteristics. Firstly social support refers to meaningful interactions and relationships with others (Reich & Zautra, 1995; Ross & Mirowsky, 1989; Walker, 2001), these relationships can be used to provide the encouragement and opportunities for individuals to achieve their desired goals (Bennett & Murphy, 1997). Support can be given in a number of ways, through practical help, emotional support, encouragement, prodding, or simply knowing there is someone to listen to their problems (Reich & Zautra; Ross & Mirrowsky; Walker). This support can come from numerous sources ranging from friends, family such as children and grandchildren, spouses, doctors, and community groups.

For many years researchers have looked at the benefits that social support has on people's health. Researchers have consistently shown that ill health is more prominent in those individuals who lack social support (Walker, 2001). Although social support can have positive effects on health it can also have negative effects in some individuals. Research suggests that in some cases support may lead the individual to lose their sense of personal control and produce a state of dependence (Walker) or depression (Ross & Mirowsky, 1989).

Perceived control and perceived social support are thought to be linked, Ross and Mirowsky (1989) looked at the relationship between social support and control in relation to depression. The study's results showed that perceived social support and perceived control were alternative ways of reducing threat. When levels of perceived control were high, levels of perceived social support were low. Conversely when levels of perceived control were low, levels of perceived social support were high. It was also discovered that perceived control and support substituted for each other in order to decrease levels of depression. The effects of either perceived control or support were lessened if the other was present. For example it was more beneficial for an individual to have high levels of perceived control and low levels of perceived support, than to have moderate levels of both perceived control and support (Ross & Mirowsky).

Research with the institutionalized elderly (Buschmann & Hollinger, 1994; as cited in Walker, 2001) and with individuals suffering from

rheumatoid arthritis (Reich & Zautra, 1995) supported the finding that perceived control and support were alternative ways to deal with threats. It is therefore theorized that an individual who feels that they have a great deal of social support will not feel the need to actively control their environment and vice versa (Buschmann & Hollinger; as cited in Walker, 2001).

## LIMITATIONS OF PREVIOUS RESEARCH

Most research in the field of perceived control of ageing is limited by a number of factors. One limitation relating to the design of the studies is the correlational nature of the research. Correlational research establishes that a relationship exists but it does not establish the direction of the relationship (Berger, 1998). The study by Campbell et al. (1995) mentioned earlier found that individuals who perceived that they had more perceived control over their health had better health practices. The researchers cannot be sure what direction this relationship works in. Does greater perceived control lead to better health practices? Or do better health practices lead to more perceived control over their health? The relationship is probably reciprocal. Skinner (1995) says that experimental and time lag research has shown that perceived control does influence behaviours. Skinner also says that researchers have shown that a person's successes and failures affect levels of perceived control for any similar activity.

Another limitation is that most of the research is cross-sectional in nature. This is problematic because it is inevitable that there will be cohort differences between groups. It may be that age differences in levels of

perceived control are due to the person's historical age rather than chronological age (Berger, 1998). For example an individual born in the 1950s will have grown up in a very different world than people born in the 1980s. Therefore any differences between these two groups could be due to a number of reasons completely unrelated to their chronological age.

With the exception of the study by Thompson et al. (1998), which looked at physical appearance, researchers have focused on perceived control of psychological aspects of ageing. This focus leaves a gap in the field in relation to the physical ageing process. While it is very worthwhile to study the psychological changes that occur during the ageing process physical changes are just as important. It is important to address changes that occur during the physical ageing process partly because of the growing emphasis on issues concerning the growing ageing population. One of the biggest areas of concern is the area of health. As pointed out earlier many health problems can be directly associated with the physical changes associated with physical ageing. Therefore it is important to gain an understanding of how people view the changes and whether they believe that they have any control over the changes. Research suggests that people need to believe that they have some degree of control over their developmental processes or they will probably not attempt take steps to show down or prevent the changes that occur. In order to gain a better understanding of the physical ageing process it is imperative that researchers study the extent to which people believe they can control the

changes, the methods which people are willing to use to prevent, slow down or compensate for some of the changes.

For practical reasons, the present study shares the first two limitations discussed above: it is correlational and cross-sectional. The main intended contribution of the present study is to extend the study of perceived control to the area of physical ageing.

## RESEARCH GOALS

### Goal Number One

The first aim of the present study was to discover how much control people think they have over the physical ageing process. Because this is a relatively new area of research the researcher intended to paint an exploratory picture of perceived control of the physical ageing process. Do individuals believe that they can influence certain aspects of their ageing, for example appearance and cardiovascular functioning, or do they believe it is better to accept or accommodate the process of ageing? A study by Heckhausen & Baltes (1991), looking at psychological aspects of ageing found that in general people perceive that they do have some control over the developmental process, however, these findings suggest that people feel that they have less control over changes that are perceived to be negative. Therefore, it is fair to suggest that individuals may perceive that they have little control over physical ageing because the majority of the changes that occur in the physical ageing process are negative.

Early longitudinal, laboratory and cross sectional research has shown that changes in control beliefs do occur as people age (Lachman & Leff, 1989; Lachman & McArther, 1986; Nelson, 1993). Later research by Heckhausen (1997) also found there were changes to people's control beliefs as they aged. Heckhausen's study revealed that generally as people age they perceive that they have less control over psychological development. Although the current study is investigating the physical changes that occur rather than the psychological changes, it is reasonable to expect that the relationship between perceived control over physical changes and age will be similar in this study.

The second part of this goal focused on the relationship between perceived control and acceptance. If individuals perceive that they have very little control over their physical ageing do they instead focus on accepting these changes? Multiple regression analysis by Thompson et al.. (1998) revealed that individuals with high levels of acceptance were less distressed when they had moderate or low levels of perceived control. These findings suggest that acceptance of the changes associated with old age will be more beneficial for those individuals who perceive that they have lower levels of control. The current research focuses on the relationship between perceived control and acceptance to investigate whether participants with higher levels of perceived control have lower levels of acceptance of physical changes.

In order to investigate this research goal the following hypotheses were tested:

*Hypothesis one:* That individuals will perceive that people in general have little control over the physical changes associated with ageing.

*Hypothesis two:* Older individuals will perceive the physical changes associated with ageing as being less controllable than will the younger participants in the study.

*Hypothesis three:* Individuals with higher levels of perceived control over physical ageing will have lower levels of acceptance.

Goal Number Two

The second aim of this research was to gain a picture of what aids and strategies individuals are willing to use and engage in to help control their physical ageing. It was also to establish whether people with higher perceived control are more likely to use strategies or aids to control physical ageing. As discussed earlier, perceived control research has revealed that individuals who report higher levels of control are more likely to engage in behaviours that are beneficial to their health and successful ageing (Campbell et al., 1995; Ziff, Conrad & Lachman, 1995). A New Zealand study, mentioned earlier, found that individuals that had higher levels of perceived control were more likely to engage in better health practices (Campbell et al., 1995). Participants with higher levels of control were also more likely to indicate a willingness to make lifestyle changes to improve health (Campbell et al., 1995). These findings, although related to health, can probably be generalised to the area of physical ageing. Therefore the following hypotheses were stated:

*Hypothesis four:* A higher level of perceived control will be related to a stronger willingness to use various technological aids to help control physical ageing.

*Hypothesis five:* A higher level of perceived control will be related to a stronger willingness to engage in strategies to help control physical ageing.

Goal Number Three

The third research goal was to investigate the sources of social support which people rely on to help with their physical ageing and to explore the relationship between perceived control and perceived social support. Do individuals with lower levels of control believe that other people such as friends and family, are more likely to provide help with the problems associated with physical ageing than individuals who have higher levels of control? Researchers (Buschmann & Hollinger 1994; as cited by Walker, 2001; Ross & Mirowsky, 1989) have shown that perceived control and perceived social support are alternative ways for an individual to deal with threats. Because researchers have discovered that it is beneficial for individuals to have high levels of control and low levels of perceived support, or vice versa, the current research intended to discover whether this relationship is present in this population. The following hypothesis was tested:

*Hypothesis six:* Individuals with high levels of control will perceive others as being less likely to provide help with physical ageing.

## Goal Number Four

Research goal number four was to look at where people get their information about the physical ageing process. This is especially important because it has been revealed that people know very little about the ageing process (Palmore, 1988; Palmore, 1998). This is concerning because if people do not know what to expect from the ageing process, how can they take steps to minimise the impact it will have on their lives? One possible source of information is related to the observation of important people in an individual's environment, for example, most of us watch our grandparents and parents age, this observation could be vital to a person's knowledge of the physical ageing process. People could get their information from a variety of other sources, including medical professionals, written media, clubs and organisations.

Research by Richmond, McCracken and Broad (1996) looked at the perceived importance of various health information sources. Participants were asked to rate a list of information sources according to their level of importance. Results showed that respondents believed that doctors were the most important information source with clubs and organisations being rated as least important. Although this research looked at the use of information sources that related to health it is expected that the results found in this study will be broadly similar. Many aspects of the ageing process can be directly associated with ill health, for example, osteoporosis, and decreases in eyesight and hearing. So although written resources such as pamphlets

could be an important source of ageing information it is expected that people will still turn to doctors and other medical professionals for advice. Therefore, it was expected that in general participants will rate doctors as an important source of ageing information. However, it was also expected that a wide range of sources will be considered important including the Internet and written resources.

## Goal Number Five

Research aim number five was to look at the relationship between perceived control and faith in technological advances. Do people believe that technology will solve the problems of physical ageing before they need to worry about themselves? Is there a relationship between level of perceived control and level of reliance on technology to supply the cures for the deficits of old age? No research has looked at the relationship between technology and people's beliefs about the controllability of physical development therefore it was not possible to formulate a hypothesis.

# Chapter two - Method

## PARTICIPANTS

The study's participants consisted of individuals from the wider Manawatu area who were over the age of 18. The participants were recruited in two ways. The first method was used to recruit younger study participants. This part of the sample was recruited from Massey University's Palmerston North Campuses. The second recruitment method was used to obtain the older study participants. These participants were recruited from various community groups in the wider Palmerston North area.

During the recruitment phase 289 questionnaires were distributed. Of these, 174 were returned yielding a 60% response rate. Demographic information for the participants can be found in chapter 3.

## MEASURE

The researcher developed the questionnaire used in this study. This was because although a number of research instruments have been developed to investigate levels of perceived control only one instrument has looked specifically at levels of control over physical changes. Parts of the current questionnaire are loosely based on Thompson et al. (1998) instrument, but that study focused completely on changes to physical appearance. Although the current research looked at changes to physical appearance the focus was on a broad range of physical changes that occur during the ageing

process. Therefore, a questionnaire had to be developed to look at the wide range of physical changes the researcher was interested in. It was also necessary to develop a research instrument that looked at the relationship between control and the use of various aids and strategies that could help individuals control their physical ageing. Subsections were developed to look at information sources and the role that the perceived social support of important others has in the physical ageing process.

The questionnaire consists of 11 sections presented in the following order. For a copy of the questionnaire please see Appendix A.

### Participant Information Sheet

The front page of the questionnaire was an information sheet for the participants'. The sheet contained a short summary of what the research is about. It also gives the participants information about their rights. It informed the participants that they were not obliged to participate in the study, and that they could withdraw at any point, up until they posted the questionnaire back to the researcher. They are also assured that their responses were completely confidential. The summary sheet also provided contact information so that the researcher can be contacted if necessary.

### Demographic Information

Participants were asked to provide the following demographic information. Participants' year of birth was collected. This allowed the researcher to work out the participants' ages. They were then asked to indicate their gender and how many years they had spent in formal education

by indicating their highest level of education achievement. Information about the person's perceived level of health was also obtained, at a later point in the questionnaire.

### Perceived Control of Physical Ageing Process:

Participants were asked to rate a series of 16 statements about the physical ageing process. Specifically they were asked to indicate how much control they felt that people in general had over the physical changes. The rating scale consisted of five points ranging from (1) no control to (5) a great deal of control. The statements related to a range of physical changes that commonly occur during ageing, for example, decreases in eyesight, increases in blood pressure and loss of bone density. The items in this section constitute the Perceived Control Over Physical Ageing scale.

### Acceptance of Physical Ageing

In this section participants were asked to rate the same series of statements as above. However, this time they were asked to indicate the extent to which they feel people in general should accept the changes. The rating scale consisted of five items ranging from (1) strongly disagree to (5) strongly agree. The items in this section constitute the Acceptance of Physical Ageing scale

### Intended Aid Use

Section three of the questionnaire measured a person's willingness to use physical aids to help control the physical ageing process. Participants were first asked to rate how likely they would be to use any of the nine aids.

The items in this scale are similar to the ones used by Thompson et al. (1998) in their study of perceived control and physical appearance. Some items were removed and some items were added in order to ensure that the aids in this section of the questionnaire related to the changes highlighted by the previous questionnaire sections. The participants were given a five point rating scale ranging from (1) would never consider to (5) would definitely consider.

Participants were then asked to answer an open-ended question. This question asked them to list any other aids that they might use to help control the physical ageing process.

Part two of this section asked participants to indicate whether they had already used the nine aids. The list was presented for a second time and respondents indicated their answer by circling either YES or NO.

The items in this section constitute the Intended Aid Use scale and the Previous Aid Use scale.

## Intended Strategy Use

Section four measured a person's willingness to use various strategies to help control the physical ageing process. Some of the items in this scale were taken from a similar scale used by Thompson et al. (1998); however, most of the scale items were constructed by the researcher to complement the items in the first two sections of the questionnaire. The questionnaire first asked participants to indicate how likely it is that they will use any of the 10 strategies in the future to help control their physical ageing. The items

were rated on a scale ranging from (1) would never consider to (5) would definitely consider.

The participants were then asked to answer an open-ended question. This question asked participants to list any other strategies that they might consider using to help control the physical ageing process.

Part two of this section asked participants to indicate whether they have already used the 10 listed strategies. The list was presented for a second time and respondents circle either YES or NO.

The items in this section constitute the Intended Strategy Use scale and the Previous Strategy Use scales.

Perceived Social Support

In this section participants were presented with a list of six individuals what could possibly influence their physical ageing. The respondents were asked to use a five point rating scale, with (1) no help and (5) a great deal of help, to indicate how much help that individual would be to their physical ageing.

Participants were also asked to answer an open-ended question. This question asked participants to list any other people who they thought could provide help with their physical ageing.

The items in this section constitute the Perceived Social Support scale.

## Information Sources

This section consisted of a list of 11 information sources from which individuals may be able to access information about the physical ageing process. The items for this scale were similar to those used by Richmond et al. (1996). The item "hospitals" was omitted as it was believed that people were not likely to seek ageing information from this source. Items added to this scale were: advertisements, health promotional pamphlets, Internet, nurses and observation of others. The participants were asked to rate how likely it is that they would use the following sources to learn about the physical ageing process. The participants were given a five point rating scale ranging form (1) very unlikely to (5) very likely.

## Faith in Technological Advancement

This section consisted of one question. Participants were asked whether they believe that technologies and advances in medicine will solve the problems of physical ageing in their lifetime. Responses were given on a single item five point scale anchored by (1) very unlikely and (5) very likely.

## Health Status

Finally participants were asked to provide a rating of their health on a seven-point scale. This scale was originally used by Laird and Chamberlain (1990) and then by Nevill (1998). Participants were asked to rate their health as compared to a person in excellent health. The single item scale ranges from terrible to excellent.

### Information Request Form

The final part of the questionnaire was a form that participants could use to request a summary sheet of the study's findings. The form could be detached from the questionnaire and then posted back to the researcher in a separate envelope.

## PROCEDURE

The study was undertaken as follows:

### Ethical Approval

Before the current study was started ethical approval had to be obtained. A mock ethics approval form was given to two academic staff members of the Massey University School of Psychology. These two people agreed that there appeared to be no significant ethical problems and that the study could commence without formal approval from Massey University's Human Ethics Committee.

### Pilot Study

Before the questionnaire was distributed to potential participants a pilot study was conducted. The participants in the pilot study were five personal friends of the researcher over the age of 18. The pilot study was done to establish whether or not individuals were able to understand the questionnaire and to establish how long it would take people to complete it. No problems were identified in the pilot study so it was decided that the questionnaire could be distributed to potential participants.

## Recruitment of Younger Participants

The younger participants were recruited from Massey University's student population. Students were approached by the researcher, outside of class time, and asked if they were interested in participating in research on the physical ageing process. If the student expressed interest in participating they were given a questionnaire, which could be completed and returned to the researcher via the postal service. It was explained to the potential participants that the questionnaire would take approximately 20 minutes to complete. It was also explained that participation in the research was purely voluntary and that there was no pressure on them to complete the questionnaire.

## Recruitment of Older Participants

The older participants were recruited via community groups. Postal addresses for various community groups were obtained from the Palmerston North City Library's computer catalogue. A letter was sent to those community groups inviting them to participate in research on the physical ageing process (See Appendix B.). The groups were invited to contact the researcher if they were interested in participating. The researcher then met with the members of these clubs. Interested members were given a copy of the questionnaire which they could complete and return to the researcher via the postal service. It was explained to the potential participants that the questionnaire would take approximately 20 minutes to complete. It was also explained that participation in the research was purely voluntary and that

there was no pressure on them to complete the questionnaire. Participants were told that a summary of the study's results would be sent to those who requested it.

## STATISTICAL ANALYSES

All statistical analyses were carried out using SPSS. Principal Component Analyses were carried out for each scale (with the exception of the Previous Aid Use scale and the Previous Strategy Use scale). Means, standard deviations, Pearson product moment correlations, and standard all-in multiple regression analyses were used to test the study's hypotheses.

# Chapter Three- Results

The study's results are presented in three sections. The first section presents demographic information pertaining to the sample. The second section presents scale analyses of the Control and Physical Ageing questionnaire that was devised for this research. The third section contains the analyses related to each of the research goals.

Once collected the data were transferred to SPSS. Some participants did not complete all items in particular scales. These individuals' scale scores were omitted from any analyses that involved that scale via the default SPSS listwise deletion option.

Before the analyses were carried out the variables were screened for assumptions of statistical analysis via the strategies described in Tabachnick and Fidell (2000). Using Z scores for each total scale, three scales were identified as being significantly skewed. These three scales were transformed using equations taken from Tabachnick and Fidell (1989) to ensure normal distributions. The data were screened for heteroscedasticity, and linearity, via examination of bivariate scatterplots. Although this strategy has some limitations (e.g. Tabachnick & Fidell, 2000) it was considered reasonable here given the small number of variables. Data were also screened for both univariate and multivariate outliers; no outliers were identified.

## DEMOGRAPHIC INFORMATION

Participants were between 18 and 86 years of age, with a mean age of 51 and a standard deviation of 17.36. Fifty eight percent of the participants were male. Participants had varying levels of education ranging from primary level to postgraduate qualifications such as Masters degrees and doctorates. The typical participant in this study had completed some undergraduate university papers. The participants typically rated their health as good or very good, with no participants believing that they had terrible or very poor health (see Figure 3.1).

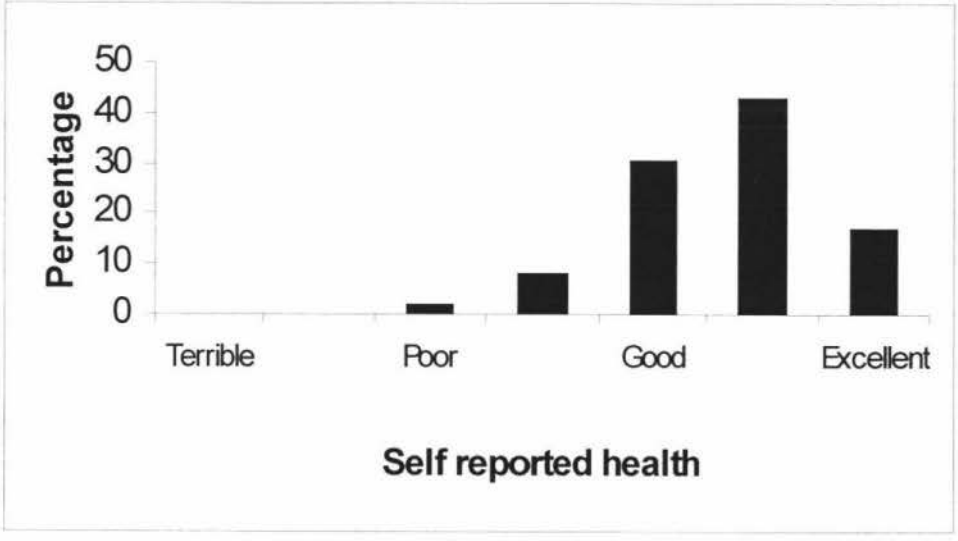


**Figure 3.1. Participants' Self-ratings of Health Status.**

## SCALE ANALYSES

Principal component analyses (PCA) were carried out for the Perceived Control over Physical Ageing scale, the Acceptance of Physical Ageing scale, the Intended Aid Use scale, the Intended Strategy Use scale, the

Perceived Social Support scale and the Information Use scale. The Previous Aid Use scale and the Previous Strategy Use scale were not analysed because they were nominal scales (Murphy & Davidshofer, 1998). For each PCA carried out, a varimax rotation was used (Aiken, 2003; Bryman & Cramer, 2001). There is some debate among statisticians regarding the appropriateness of orthogonal verses oblique rotations. Nunnally (1978) reviews the area and claims a preference for orthogonal rotations as they are simpler mathematically and there have been numerous demonstrations that the two types of rotations lead to the same conclusions about the number and kind of components within a particular matrix of correlations. The number of components retained in the final solution for each analysis were decided via an examination of scree plots and the criterion of eigenvalues greater than one. Zwick and Velicer (1986) compare a number of rules for determining the number of components to retain in a solution and suggest that some combination of scree plots, eigenvalues greater than 1 and "common sense" is probably the best strategy. The results for each scale analysis are reported separately, in the order which the scales appear in the questionnaire. For clarity of presentation component loadings under .4 are not reported. Tabachnick and Fidell (2000) suggest a loading cutoff of .45 or better to aid interpretability of a component. Cronbach's alpha reliability analyses were also carried out for each of the scales and are reported in this section.

## Perceived Control Over Physical Ageing Scale

Analysis for the total Perceived Control Over Physical Ageing scale showed that the scale had a high level of internal consistency ($\alpha$=0.84).

As stated above the scale was analysed using PCA; the results revealed a five-component solution. However, the control scale appeared to be dominated by a single component rather than the five sub-scales: these explain very little more of the variance. The control scale was therefore used as a whole in subsequent analyses.

## Acceptance of Physical Ageing Scale

Analyses revealed that the total Acceptance of Physical Ageing scale had a high level of internal consistency ($\alpha$=0.92).

From this PCA a four-component solution was chosen (see Table 3.1). The solution explained 74.5 percent of the total variance. The components were identified as the *Sensory A component* (Component 1), the *Structural component* (Component 2), the *Sensory B component* (Component 3), and the A*ppearance component* (Component 4). Two variables (loss of bone density, development of arthritis) were complex variables which did not load clearly on one component.

**Table 3. 1 Component loadings for the Acceptance of Physical Ageing scale.**

| Item | Component Loadings | | | |
|---|---|---|---|---|
| | 1 | 2 | 2 | 4 |
| Decreases in eyesight | .87 | | | |
| Development of cataracts | .82 | | | |
| Hearing loss | .78 | | | |
| Loss of balance | .75 | | | |
| Declines in muscle strength | | .77 | | |
| Increases in blood pressure | | .76 | | |
| Weight gain | | .75 | | |
| Loss of bone density | | .69 | .42 | |
| Development of osteoporosis | | .66 | | |
| Decreases in smell | | | .89 | |
| Decreases in taste | | | .88 | |
| Increases in reaction times | | | .66 | |
| Development of arthritis | .46 | .45 | .47 | |
| Development of wrinkles | | | | .88 |
| Hair loss | | | | .88 |
| Development of age spots | | | | .78 |
| Evienvalue | 7.42 | 2.05 | 1.29 | 1.17 |
| % of variance | 46.4 | 12.81 | 8.05 | 7.28 |

## Intended Aid Use Scale

Analyses for the total Intended Aid Use scale showed good internal consistency ($\alpha$=0.71).

From this PCA a two-component solution was chosen (see Table 3.2). The solution explained 63 percent of the total variance. Each component was considered to be a component of the Intended Aid Use scale. The

components were identified as the *Appearance component* (Component 1) and the *Sensorimotor component* (Component 2).

**Table 3. 2 Component loadings of items on the Intended Aid Use scale.**

| Item | Component loadings | |
|---|---|---|
| | 1 | 2 |
| Face-lift | .83 | |
| Hair implants | .83 | |
| Liposuction | .77 | |
| Drugs to treat hair loss | .71 | |
| Dieting drugs | .61 | |
| Hearing aids | | .89 |
| Reading glasses | | .86 |
| Hip replacements | | .83 |
| Walking sticks or frames | | .76 |
| Evienvalue | 2.95 | 2.75 |
| % of variance | 32.76 | 30.53 |

## Intended Strategy Use Scale

Analyses for the total Intended Strategy Use scale showed that the scale had high internal consistency ($\alpha$=0.79).

From this PCA a two component solution was selected (see Table 3.3). The solution explained 63 percent of the total variance. Each component was considered to be a component of the Intended Strategies scale. The components were identified as the *Dietary component* (Component 1) and the *Behavioural component* (Component 2).

**Table 3. 3 Component loadings of the items on the Intended Strategy Use scale.**

| Item | Component loadings | |
|---|---|---|
| | I | II |
| High calcium diet | .86 | |
| Low salt diets | .84 | |
| Low fat diets | .84 | |
| Calcium supplements | .78 | |
| Avoidance of load noise | | .73 |
| Exercise programs | | .67 |
| Staying out of the sun | | .65 |
| Not smoking | | .61 |
| Drinking little or no alcohol | | .45 |
| Using sunscreen | | .43 |
| Eigenvalue | 3.57 | 1.57 |
| % of variance | 35.66 | 15.68 |

Perceived Social Support Scale

Reliability analyses revealed that the scale had a high level of internal consistency ($\alpha$=0.85). When the PCA was carried out for this scale it was discovered that the scale was best described by one component, therefore there were no components identified for this scale.

Information Use Scale

Analyses revealed that the scale had a high level of internal consistency ($\alpha$=0.85). When the PCA was carried out for this scale it was discovered that the scale was best described by one component, therefore there were no components identified for this scale.

## ANALYSES RELATED TO THE RESEARCH GOALS

### Research Goal Number One

The first research goal was to answer three questions: How controllable do people perceive the physical ageing process to be? Do levels of perceived control alter as people age? To what extent do people believe that it is better to accept physical ageing rather than trying to control it?

The first research question can be answered by studying descriptive data for each individual item in the Perceived Control over Physical Ageing scale (see Table 3.4). Overall the mean scores support the hypothesis that individuals perceive that people in general have little control over the ageing process. Eleven of the 16 items were rated in the lower half of the scale (Overall scale $M$ =2.40). The exceptions were weight gain, increased blood pressure, muscle strength loss, loss of bone density and development of osteoporosis.

The second research question looked at changes in levels of perceived control alter as people age. The second hypothesis was that older individuals would perceive the physical changes associated with ageing to be less controllable than the younger participants. This hypothesis was addressed by a Pearson product moment correlation between age and levels of perceived control. The correlation revealed no significant relationship between the variables, $r$=.13, $p$=.09. This means that hypothesis two was not supported.

**Table 3. 4 Descriptive data for the Perceived Control Over Physical Ageing scale.**

| Variable | N | *M*[a] | *SD* |
|---|---|---|---|
| Weight gain | 174 | 4.06 | .89 |
| Increased blood pressure | 172 | 3.49 | .93 |
| Muscle strength loss | 172 | 3.16 | 1.02 |
| Loss of bone density | 172 | 2.89 | 1.1 |
| Development of osteoporosis | 169 | 2.68 | 1.12 |
| Hearing loss | 173 | 2.36 | 1.03 |
| Development of wrinkles | 173 | 2.35 | .92 |
| Increased reaction times | 174 | 2.27 | 1.04 |
| Development of arthritis | 171 | 2.17 | .99 |
| Development of age spots | 174 | 2.09 | .99 |
| Eyesight decreases | 174 | 2.02 | 1.09 |
| Decreases in taste | 172 | 1.9 | .98 |
| Loss of balance | 174 | 1.86 | .99 |
| Decreases in smell | 172 | 1.78 | .94 |
| Development of cataracts | 172 | 1.78 | 1.09 |
| Hair loss | 173 | 1.64 | .79 |
| Average control score | 163 | 2.40 | .54 |

[a] The item scales went from 1 (no control) to 5 (a great deal of control).

Research question number three looked at the extent to which people believe it is better to accept the changes related to the physical ageing process rather than to try and control them. This question can be answered by looking at the descriptive data for the Acceptance of Physical Ageing scale. Table 3.5 shows the means and standard deviations for each individual acceptance scale item. Overall the mean scores revealed that participants felt that people should generally accept the physical changes. All but two items were rated in the upper half of the acceptance scale (*M*=3.08). A Pearson product moment correlation was carried out between

the mean item scores on the Acceptance of Physical Ageing scale and the Perceived Control Over Physical Ageing scale. This correlation was found to be significant, $r$=-.78, $p$<.001. This negative correlation means that the higher the mean score for an individual item on the Perceived Control Of Physical Ageing scale the lower the mean score will be on the same item in the Acceptance Over Physical Ageing scale.

Another Pearson product moment correlation was carried out to test for a relationship between perceived control and levels of acceptance across individuals. This relationship was found to be statistically significant $r$=-.35, $p$<.001. This correlation shows an inverse relationship between levels of perceived control and acceptance, as people's levels of perceived control increased levels of acceptance decreased and vice versa.

Negative correlations were also found between the Perceived Control Over Physical Ageing scale and all four Acceptance of Physical Ageing components; the Sensory B component, $r$=-.37, $p$<.001, the Sensory A component, $r$=-.27, $p$<.001, the Structural component, $r$=-.28, $p$<.001, and the Appearance component, $r$=-.27, $p$<.001. These findings all support hypothesis three that individuals with higher levels of perceived control will have lower levels of acceptance. This means that individuals who perceive people have higher levels of control over the physical ageing process will believe that people should have lower levels of acceptance and vice versa.

**Table 3. 5 Descriptive data for the Acceptance of Physical Ageing scale.**

| Variable | N | *M*[a] | *SD* |
|---|---|---|---|
| Hair loss | 173 | 4.06 | 1.05 |
| Development of wrinkles | 173 | 3.85 | 1.07 |
| Development of age spots | 174 | 3.71 | 1.09 |
| Decreases in smell | 174 | 3.49 | 1.09 |
| Decreases in taste | 173 | 3.47 | 1.09 |
| Increased reaction times | 173 | 3.12 | 1.07 |
| Hearing loss | 174 | 3.09 | 1.14 |
| Eyesight decreases | 174 | 3.03 | 1.24 |
| Loss of balance | 173 | 3.00 | 1.24 |
| Development of cataracts | 173 | 2.99 | 1.37 |
| Development of arthritis | 174 | 2.91 | 1.12 |
| Loss of bone density | 173 | 2.80 | 1.14 |
| Development of osteoporosis | 173 | 2.75 | 1.16 |
| Muscle strength loss | 174 | 2.61 | 1.15 |
| Increased blood pressure | 174 | 2.32 | 1.09 |
| Weight gain | 174 | 2.12 | 1.09 |
| Average acceptance score | 167 | 3.08 | .78 |

[a]The item scale went from 1 (strongly disagree) to 5 (strongly agree).

## Research Goal Number Two

Research goal number two was to explore what aids and strategies people indicated they were willing to use in order to help control physiological ageing, and to investigate the relationship of perceived control to aid and strategy use.

In order to explore which aids and strategies people were willing to use to help them control physical ageing, two tables were produced. Each

table shows the means and standard deviations and the percentage of participants who indicated that they had already used the aids or strategies to help control physical ageing.

**Table 3. 6 Descriptive data for the Intended Aid Use scale; Percentages for the Previous Aid Use Scale.**

| Variable | N | *M*[a] | *SD* | Have already used aid (%) |
|---|---|---|---|---|
| Wear Reading glasses | 173 | 4.83 | .50 | 70.50 |
| Wear a hearing aid | 174 | 4.65 | .68 | 5.80 |
| Use a walking stick or frame | 173 | 4.37 | .87 | 6.40 |
| Get a hip replacement | 174 | 4.3 | .84 | 3.50 |
| Use drugs to treat hair loss | 173 | 2.06 | 1.25 | .60 |
| Use dieting drugs | 174 | 1.87 | 1.18 | 6.90 |
| Get hair implants | 173 | 1.54 | 1.03 | 0 |
| Get a face lift | 174 | 1.45 | .94 | 0 |
| Get liposuction | 173 | 1.38 | .87 | 0 |
| Average intended aid use score | 169 | 2.95 | .51 | |

[a] The item scale ranged from 1 (would never consider) to 5 (would definitely consider).

Table 3.6 shows the results for the Intended Aid Use scale and the Previous Aid Use scale. The results for the Intended Aid Use scale were mixed. Item means covered almost the entire possible range. Four of the scale items were rated above the mid-point. The remaining five items were scored below the mid-point. With the exception of reading glasses very few participants indicated that they had used any of the aids before. The items that were rated above the mid-point all related to Sensorimotor functioning and all the items below the mid-point are related to cosmetic treatments.

The results for the Intended Strategy Use scale were much more consistent, with all scale items being scored above the mid-point. With the exception of four items, over half of the participants indicated that they had previously used the strategies. Although participants indicated a strong willingness to use the strategies in the future, participants also indicated that there were some items that less than 50% of them had already used. For example, going a high calcium diet and using calcium supplements, were both scored quite highly on the Intended Strategy Use scale, but only 22% of participants indicated that they had already used either of the strategies.

**Table 3. 7 Descriptive data for the Intended Strategy Use scale; Percentages for the Previous Strategy Use Scale.**

| Variable | N | *M*[a] | *SD* | Have already used strategy (%) |
|---|---|---|---|---|
| Not smoking | 173 | 4.74 | .87 | 90.10 |
| Use sunscreen | 174 | 4.72 | .64 | 89.50 |
| Have an exercise program | 174 | 4.61 | .71 | 72.30 |
| Go on a low fat diet | 174 | 4.34 | .96 | 56.10 |
| Go on a low salt diet | 173 | 4.05 | 1.09 | 35.50 |
| Avoid loud noise | 174 | 4.02 | 1.10 | 56.40 |
| Go on a high calcium diet | 174 | 4.01 | 1.02 | 22.50 |
| Use calcium supplements | 174 | 3.86 | 1.15 | 22.50 |
| Stay out of the sun | 174 | 3.66 | 1.16 | 52.10 |
| Drinking little or no alcohol | 172 | 3.57 | 1.26 | 47.60 |
| Average intended strategy use score | 169 | 2.95 | .51 | |

[a] The item scale ranged from 1 (Would never consider) to 2 (would definitely consider).

In order to establish whether a relationship between perceived control and the intended use of aids to help ageing exists, a standard all-in multiple regression was carried out. Previous aid use and level of self-reported

health were both included in the analysis as it was thought these two variables could have been possible confounds. The results of this analysis are presented in Table 3.8. This table shows the means and standard deviations, Pearson's product moment correlations, standardised regression coefficients (β), *R*, $R^2$, and adjusted $R^2$. The multiple regression analysis found no significant relationship between perceived control and intended aid use, $R^2$= .01, *F*=(1, 36), *p*=.26. This means that hypothesis four, that a higher level of perceived control was related to a stronger willingness to use various aids was not supported.

**Table 3. 8 Standard multiple regression analysis for the relationship between Perceived Control Over Physical Ageing and Intended Aid Use.**

| Variables | Intended aid use (DV) | Perceived control | Previous aid use | Self reported health | Beta | |
|---|---|---|---|---|---|---|
| Perceived control | .02 | | | | .01 | |
| Previous aid use | -.13 | .1 | | | -.15 | |
| Self reported health | .04 | .13 | .17* | | .09 | |
| | | | | | | $R^2$ = .03 |
| Means | 5.13 | 6.16 | 17.05 | 5.7 | Adjusted | $R^2$ = .01 |
| Standard deviations | .45 | .70 | .75 | .90 | | R =.16 |

* *p*<.05

A second all in multiple regression analysis was carried out to investigate the possibility of a relationship between perceived control and intentions to use strategies to help control the physical changes associated with physical ageing. Previous strategy use and level of self-reported health were both included in the analysis as it was thought these two variables

could have been possible confounds. The results of this analysis are presented in Table 3.9, which shows the means and standard deviations, Pearson's product moment correlation's, standardized regression coefficients (β), *R*, $R^2$, and adjusted $R^2$.

**Table 3. 9 Standard multiple regression analysis for the relationship between Perceived Control Of Physical Ageing and Intended Strategy Use.**

| Variables | Intended strategy use (DV) | Perceived control | Previous strategy use | Self reported health | Beta | |
|---|---|---|---|---|---|---|
| Perceived control | -.13 | | | | -.01 | |
| Previous strategy use | .42* | -.28* | | | .41** | |
| Self reported health | -.05 | .13 | -.05 | | -.06 | |
| | | | | | | $R^2$ = .18 |
| Means | 2.61 | 6.14 | 14.62 | 5.68 | Adjusted | $R^2$ = .16** |
| Standard deviations | 1.23 | 0.7 | 2.43 | 0.91 | | R = .42 |

* $p<.01$
** $p<.001$

The multiple regression analysis revealed that the three variables as a set accounted for 16% of the total variance of perceived control, $R^2$= .16, $F$=(10, 32), $p<.001$, and that Previous Strategy Use accounted for the majority of the variability in Intended Strategy Use. The relationship between Intended Strategy Use and Perceived Control Over Physical Ageing was not significant and therefore hypothesis five that a higher level of perceived control was related to a stronger willingness to use various strategies, was not supported.

In conjunction with the quantitative data collected in this section, qualitative data was also collected. Participants were asked to indicate whether there were other aids and strategies that they would consider using to help them control their physical ageing. All items listed in the answers to these open-ended questions are presented in tables. Several participants listed more than one item. The items were grouped into categories, each category represents at least four items (or in some cases fewer items but some items listed by more than one person). For the "other aids" question, a few responses were eliminated because they were actually issues that appeared later in the questionnaire in the Intended Strategy Use.

Table 3.10 presents the qualitative results for the aid section. Twenty-nine participants answered this section of the questionnaire, 11 of these were female and 18 were male. Five broad categories were identified from the data. These were *drugs*, *surgery*, *nutrition*, *equipment*, and *other*.

A number of points can be made from the data collected by the open-ended question. Firstly there is a strong emphasis on medical involvement, with a wide range of surgeries and drugs being listed. Secondly there appears to be a big influence on nutritional issues. There is also an emphasis on the need for individuals to have a good sex life.

**Table 3.10 Other aids that could be used (N=29).**

| Drugs | Surgery | Nutrition | Equipment | Other |
|---|---|---|---|---|
| Cancer drugs | Cancer surgery | Fruit and vegetables | Special mattress | Holidays |
| Viagra | Organ transplants | Less protein | Jar or can openers | Work |
| Mobility drugs | Eye operations | No dairy | Mobility scooter | Clubs |
| HRT | Replacement knees | Vitamin supplements | | Natural products |
| | | Herbals | | Lovers |
| | | Antioxidants | | Acupuncture |
| | | Diet | | |
| | | Amino acids | | |

Table 3.11 presents the qualitative responses from the "other strategies" questions. Thirty-one participants answered this question, of these 12 were female and 19 were male. The responses were categorized into five broad categories. These were stress management, nutrition, mental activity, rest and sleep, and other. Once again there is an emphasis on the importance of nutrition. There is also an emphasis on getting enough sleep, and on remaining mentally active. There was a lot of attention given to stress management.

**Table 3.11 Other strategies that could be used (N=31).**

| Stress Management | Nutrition | Mental Activity | Rest and sleep | Other |
|---|---|---|---|---|
| Stress Management | Vegetables | Keep mentally active | Sleep | Medical checks |
| Relaxation | Magnesium | Keep brain active | Rest | Positive attitude |
| Massage | Healthy Food | | | Personal fitness |
| | Fruit | | | Work |
| | Diet | | | Drugs |
| | | | | Socializing |
| | | | | Skin creams |
| | | | | Sex |
| | | | | Physiotherapy |
| | | | | Crafts |
| | | | | Sport |
| | | | | Hobbies |

## Research Goal Number Three

The third research goal was to look at perceived social support and its relationship to perceived control. On average all the sources of support listed in the Perceived Social Support scale were considered to be important, with all the sources being rated over the midpoint of the scale (*M*=3.15). Spouses or partners were considered to be the most important source of support,

followed by various different medical professionals, and friends were thought to provide the least support (see Table 3.12). A Pearson product moment correlation revealed no significant relationship between perceived social support and perceived control, $r$=.07, p=.35 thus hypothesis six that individuals with higher levels of control will have lower levels of perceived social support and vice versa was not supported.

**Table 3.12 Descriptive data for the Perceived Social Support scale.**

| Variable | N | $M^a$ | *SD* |
|---|---|---|---|
| Spouse or partner | 170 | 3.78 | 1.17 |
| Doctors | 172 | 3.69 | 1.09 |
| Health professionals | 169 | 3.59 | 1.09 |
| Nurses | 172 | 3.26 | 1.12 |
| Chemists (pharmacists) | 172 | 3.24 | 1.09 |
| Friends | 172 | 3.15 | 1.13 |
| Average perceived social support score | 168 | 3.44 | .84 |

[a] The item scale ranged from 1 (no help) to 5(a great deal of help).

In conjunction with the quantitative data collected in this section there was a qualitative section. Participants were asked to list any other people they thought might provide help with their physical ageing. Twenty participants answered this section of the questionnaire; seven of these were female and 13 were male. The responses from this question were spilt into three broad categories using the same criteria as for the other open-ended questions. These were *other health care workers*, *support groups*, *other relatives*, and *others* (see Table 3.13).

The main focus of the responses in this section was on health care workers, including alternative health practitioners. There was also a strong emphasis on the use of support groups. There were also a wide range of family members listed as possible sources of support.

**Table 3.13 Other people who can provide help with physical ageing (N=20).**

| Other health care workers | Support groups | Other relatives | Others |
|---|---|---|---|
| Dietitians | Arthritis society | Family | Physical trainers |
| Dental care | Cancer society | Siblings | Entertainers |
| Naturopaths | Asthma society | Children | Travel agents |
| Physiotherapists | Support groups | Adult children | Clubs |
| Reflexologists | | Grandchildren | Church |
| Kineslologist | | | Colleagues |
| | | | Beautician |
| | | | Spiritual mentors |

## Research Goal Number Four

Research goal number four explores the use of information sources that people think could be used to learn about the physical ageing process. To answer this question means and standard deviations were calculated for each item on the Information Use scale. The means were then rank ordered (see Table 3.14.). Overall, doctors were thought to be the most likely source of ageing information, with radio being the most unlikely. Overall the sources were rated as possible sources of ageing information with only the lowest information source being rated below the mid-point ($M$=2.59).

**Table 4. 14 Descriptive data for the Information Use scale (rank ordered by mean).**

| Variable | N | *M*[a] | *SD* |
|---|---|---|---|
| Doctors | 174 | 3.75 | 1.11 |
| Observation | 168 | 3.57 | 1.24 |
| Health promotional pamphlets | 173 | 3.51 | 1.16 |
| Books | 174 | 3.49 | 1.13 |
| Nurses | 174 | 2.93 | 1.21 |
| Clubs and organisations | 174 | 2.83 | 1.13 |
| Magazines | 174 | 2.78 | 1.24 |
| Television | 174 | 2.78 | 1.23 |
| Advertisements | 174 | 2.67 | 1.26 |
| Internet | 171 | 2.59 | 1.3 |
| Radio | 174 | 2.43 | 1.07 |
| Average information source score | 164 | 3.04 | .76 |

[a] The item scale ranged from 1 (very unlikely) to 5 (very likely).

## Research Goal Number Five

Research goal number five looked at people's beliefs about whether technological and medical advances would solve many of the problems associated with physical ageing in their life-time. On average, participants indicated that there were moderate chances that many of the problems would be solved ($M$=3.32, $SD$= 1.20). A Pearson product moment correlation revealed no significant relationship between perceived control and belief in technological solutions, $r$=.05, $p$=.52. However belief in technological solutions was significantly related to five other variables. A negative relationship was found between belief in technological solutions and intended strategy use, $r$=-.16, $p$<.05. This relationship showed that people who placed

more faith in technological advancement were less likely to indicate they would use the items in the scale than those individuals who placed less faith in the ability of technology to solve many of the problems of physical ageing. A positive relationship was found between belief in technological solutions and intended aid use, $r$=.18, $p$<.05. This relationship shows that individuals who placed more faith in technology were more likely to indicate a willingness to use the aids listed in the Intended Aid Use scale. A negative relationship was found between belief in technological solutions and acceptance of physical ageing, $r$=-.18, p<.05. This relationship showed that people who placed more faith in technological solutions believed that people should be less willing to accept the changes associated with physical ageing. A positive correlation was found between belief in technological solutions and information sources, $r$=.25, $p$<.001. This relationship showed that people who placed more faith in technological solutions were more likely to indicate intentions to use the various information sources listed in the Information Use scale. Finally a positive relationship was found between belief in technology and perceived social support, $r$=.25, $p$<.001. This relationship suggests that people who showed more faith in technological solutions were more likely to believe that people in their environment would be able to provide support to help them deal with the physical ageing process.

# Chapter Four – Discussion

This study investigated several topics related to the general theme of the perceived control of physical ageing. The following sections provide a summary and interpretation of the results and some comments on how the results can benefit future research and everyday living. This chapter is presented in the following format. The first section provides a summary and interpretation of the findings. This includes a consideration of some implications of the findings. Finally, there is a discussion of the study's limitations, and possible directions for future research.

## SUMMARY AND INTERPRETATION OF FINDINGS

This section provides a summary, an interpretation and implications of the findings related to each of the study's research goals.

### Research Goal Number One

The first research goal was to investigate the extent to which people view physical ageing as controllable. In order to do this, three hypotheses were stated. The first hypothesis was that participants would perceive that people in general have little control over the physical ageing process. The results supported the hypothesis. The overall mean score on the Perceived Control Over Physical Ageing scale was below the midpoint, and only five of the 16 items had means above the midpoint. This finding is consistent with research literature in the area of ageing, for example Heckhausen and Baltes

(1991), and Thompson et al. (1998). The variation in perceived controllability across scale items can be partially explained by the distinction between primary and secondary ageing outlined in chapter one. The items that were considered to be relatively uncontrollable are to a large extent primary changes, meaning that although the changes can be slowed down or compensated for they cannot be eradicated, and are therefore less controllable. The five items with mean scores above the mid-point were weight gain, increased blood pressure, muscle strength loss, loss of bone density and development of osteoporosis. These are to a larger extent secondary changes, thus they can be largely prevented via lifestyle changes, particularly by healthy diets and exercise programmes. Participants were correct in assuming that people can have an influence over the development of these changes. It is also possible that people are more aware of the possibility of controlling these changes as they mainly have health implications. It is possible that health professionals such as doctors and nurses have tested for and/or treated some of the changes, for example increased blood pressure and weight gain. There has also been considerable media attention given to issues such as healthy eating, maintaining a healthy weight and heart, by medical professionals and groups such as the Heart Foundation.

The study suggests that people in general perceive that they have little control over the majority of the changes that occur during the physical ageing process. This is important as research has revealed that a sense of

control could be important in maintaining well-being (Lang & Heckhausen, 2001), decreasing levels of emotional distress (Thompson et al., 1998) and lowering mortality rates (Langer & Rodin, 1976; Schulz, 1976) even if the potential for actual control is small (Thompson et al., 1998).

The second part of the research goal looked at the relationship between age and perceived control. The second hypothesis, that older individuals would perceive developmental changes to be less controllable than the younger participants would, was not supported. This finding is inconsistent with previous literature, which found declines in control beliefs as people age (Heckhausen, 1997; Lachman & Leff, 1989; Lachman & McArther, 1989; McConatha & Huba 1999; Ryckman & Malikiosi, 1975).

There are a number of reasons why this hypothesis may not have been supported in the present study. Firstly this is the first study that has looked at age related changes in levels of perceived control and physical ageing. The studies mentioned earlier looked at control beliefs related to other aspects of ageing including psychological ageing (Heckhausen & Baltes, 1991) and intellectual functioning (Lachman & Leff, 1989).

Secondly the age structure of the study's sample may have played a role in the non-significant finding. The sample predominately consisted of older individuals and had very few participants under the age of 30. Although the distribution for the age group was normal, a larger number of younger participants may be needed to show any significant age differences between older and younger individuals.

The third part of the research goal looked at the relationship between acceptance and perceived control. The study's results supported the hypothesis that individuals who believed that people have a higher level of control over physical changes believed that people should have lower levels of acceptance. A significant negative correlation was found between Perceived Control Over Physical Ageing and the Acceptance of Physical Ageing scale as a whole and with each of the four components; the Structural component, Sensory A component, Sensory B component and the Appearance component. Research by Thompson et al. (1998) had previously looked at the relationship between control and the acceptance of age related changes to physical appearance. Their research showed that it was beneficial for individuals to have high levels of acceptance when levels of control were low. The present study's findings are encouraging as they show that people with lower levels of control are more likely to have higher levels of acceptance. This means that they are possibly more likely to be less distressed by the changes that are occurring in their bodies, which will hopefully in turn lead to higher levels of life satisfaction.

## Research Goal Number Two

The second research goal looked at the relationship between perceived control and a willingness to engage in practices to control physical ageing. In order to achieve this, this section looked at the use of aids and strategies separately. It also looked at which aids and strategies people

indicated they would be likely to use and which aids and strategies they had already used.

Overall, participants indicated a willingness to use aids that were related to Sensorimotor functioning, for example, a hip replacement, but people indicated a general unwillingness to use aids to reverse changes to physical appearance, for example facelifts and dieting drugs. This unwillingness could possibly be attributed to two factors. Firstly, the aids for physical appearance, for example liposuction, may have been considered too radical by many of the participants. It is also possible that these aids are too expensive and therefore considered unobtainable.

With the exception of reading glasses the majority of participants indicated they had not used the aids in the Intended Aid Use scale. The fact that few participants had used hearing aids, or walking sticks, or had hip replacements is not surprising because these aids cannot be used to prevent physical ageing changes: they are corrective measures that can only be used when problems already exist. In Schulz and Heckhausen's (1996) model, they represent compensatory primary control. As the mean age in the sample was 51, most participants were probably too young to need these aids.

The results relating to strategy use were more consistent. Participants indicated a strong willingness to use the strategies. The Previous Strategy Use scale did show a few surprising findings. Although the majority of the scale items had already been used by the majority of participants, less than

50% of participants had tried to control physical ageing by drinking little or no alcohol, taking calcium supplements, or adopting low salt or high calcium diets. This is surprising because in order for these strategies to be most effective they need to be used before late adulthood. Use of these strategies could represent either selective or compensatory primary control (Schulz & Heckhausen,1996). Secondly only just over 50% of participants indicated that they had already tried to control their physical ageing by using low fat diets, staying out of the sun or avoiding loud noise. These findings are especially surprising as the first two of these strategies are extremely prominent in the media. There has been a huge amount of importance of staying out of the sun when ultra violet rays are at their most damaging. There has also been a strong emphasis placed on the need for a low fat healthy diet by the Heart Foundation, the Diabetic Society and medical professionals. It therefore seems that although they are willing to take precautions in the future, many people do not begin using some of the strategies early enough. It appears that advertising campaigns and health professionals have got the message across that people need to take certain step to help control ageing, but more needs to be done to ensure that people actually implement some of these strategies.

Qualitative data were also collected about the possible aids and strategies that people indicated they might use to help control physical ageing. Aids and strategies were once again looked at separately.

For the aid section five categories were identified; drugs, surgery, nutrition, equipment, and an 'other' category. There was a strong emphasis on medical aids with a broad range of drugs and surgeries being identified. This illustrates a strong reliance on medical technology and professionals to solve the problems of ageing. Secondly, the large number of nutritional aids listed can probably be attributed to a growing emphasis on an individual's personal responsibility for their health by the media; this can be illustrated by the growing number of advertisements stressing the need for a healthy diet. An example is the campaign for individuals to eat five or more servings of fruit and vegetables per day.

Although the study did not look at physical changes relating to sexual activity, participants placed a lot of emphasis on the use of Viagra to improve sexual functioning as well as the need for lovers. This highlights the importance that people place on an active sex life.

For the strategy section five categories were identified: these were stress management, nutrition, mental activity, rest and relaxation and an 'other' category. The inclusion of a number of items relating to stress management is consistent with the growing emphasis that has been given to issues relating to stress during the last decade (Davison & Neale, 1998). Stress issues have become highly prominent in the media and with health professionals. People are much more aware of the effects stress can have on their health and are encouraged to take measures to minimise its effects.

As with the aid section there was an emphasis on nutritional items. As explained above this is not surprising with the push for people to eat a more balanced diet and advertising by various health food companies to use their vitamins and supplements.

The mental activity section highlighted the importance of keeping mentally active and the importance of maintaining brain functioning. The sleep and rest category emphasised the importance of adequate amounts of rest and sleep in order to help maintain the bodies natural repair systems. These two categories indicate that some participants appreciate the link between physical and psychological aspects of ageing.

Although items listed in the open-ended sections of the Intended Aid Use scale and the Intended Strategy Use scale, suggest a few additional items, less than 20% of the sample listed any items. This suggests that the scales had reasonable breadth of coverage.

The second part of this research goal looked at the relationship between perceived control and future use of aids and strategies. No significant relationship was found between perceived control and intentions to use aids or strategies. This finding is not consistent with those of Campbell et al. (1995) where people with higher levels of perceived control were more likely to engage in better health practices and to indicate a willingness to make lifestyle changes. This could have been for two reasons. Firstly the sample in Campbell et al., was a much older sample than the one used in this study. Secondly the participants, were only asked about their

willingness to change dietary behaviour if it was going to improve future health, not to make a broad range of changes affecting various aspects of physical ageing.

## Research Goal Number Three

The third research aim was to investigate the sources of social support which people rely on to help with their physical ageing and to explore the relationship between perceived control and perceived social support. Descriptive data revealed that all the sources identified in the Perceived Social Support scale were rated as being possible sources of support. Spouses and partners were rated highest followed by various medical professionals. Analyses revealed that there was no significant relationship between perceived support and perceived control. This finding is inconsistent with findings of previous literature where an inverse relationship between these two variables has been found for example Ross and Mirowsky (1989). There are a number of reasons that could explain why this relationship was not found in this study. Firstly the previous research in this area was done looking at depression (Ross & Mirowsky), women suffering from rheumatoid arthritis (Reich & Zautra, 1995) and the institutionalised elderly (Buschmann & Hollinger, 1994; as cited in Walker, 2001). Although it was assumed in this study that the relationship found in these three areas would be generalisable to the area of physical ageing that is not necessarily true.

Qualitative data were also collected for this section. Coding revealed that the responses fell into four categories. These were: other health care workers, support groups, other relatives and an 'other' category. The other health care workers category provided more evidence of people's faith in health practitioners, including alternative practitioners such as naturopaths. This is not surprising, as there was a similar emphasis on the importance of medical aids from the earlier open-ended question on aid use. It seems that some people place a lot of faith on health practitioners and technologies to be able to solve the problems associated with the physical ageing process.

The support groups and the 'other' category revealed the wide range of people and organisations people approached in order to gain support; these included church groups, entertainers and the Cancer Society. Finally the other relatives category revealed the importance people place on their family as a source of support. Although items listed in the open-ended section suggest a few additional items, less than 20% of the sample listed any items this suggests that the scale had reasonable breadth of coverage.

## Research Goal Number Four

The fourth research goal looked at where people might get information about the physical ageing process. It is important to find out where people are likely to obtain information about the physical ageing process for two reasons. Firstly it is important to know where people are getting their information about physical ageing, so that the quality of the information can be monitored. Secondly knowing where individuals are likely

to turn for information about the ageing process enables public health and similar organisations to direct their resources effectively.

As expected, people perceived that doctors would be the most important source of ageing information, this is consistent with previous research by Richmond et al. (1996) which looked at the importance of health information sources. Observation of others was rated as the second most likely information source. This is probably because people like to observe older individuals as it allows them to anticipate when an event or change is likely to occur and to learn how other people have coped with it. A prominent developmental theorist Neugarten believes that if an event or change occurs as expected people can deal with it accordingly and it will proceed smoothly (Hoyer, Rybash, & Roodin, 1999; Papalia et al., 2002). There may be special value in observing older relatives because these people share similar genetic material. By observing relatives people can learn whether they have predispositions to some aspects of physical ageing. An example of this would be that some men are genetically inclined to lose their hair quite early in life by and observing this early hair loss in male relatives men may be better equipped to deal with this change when it happens to them.

## Research Goal Number Five

This research goal looked at faith in technological advances and its relationship to levels of perceived control. It was thought to be important to look at people's views on the role of technological advances because of the growing interest in scientific improvements in health and other areas such as

genetic engineering. On average people believed that there was a moderate chance that technological advances would solve some of the problems associated with physical ageing in their lifetime. There was no significant relationship found between perceived control and beliefs about technological advances.

There were however, significant relationships between faith in technological advances with other variables. There were positive relationships found with future possible aid and future possible strategy use. It is are not surprising that people who have higher levels of faith in the power associated with technology to solve the problems of physical ageing are more likely to engage in strategies and use aids that could help them achieve this.

Another positive relationship was found between belief in the power of technology and scores on the information use scale. Those individuals who placed more faith in the power of technology were more likely to indicate that they would use the indicated information sources. Once again this relationship is understandable as people who believe that it is more likely that technology will provide the answers to the problems of physical ageing, are probably more likely to spend time using information sources to research the changes and how technological advancements may help them.

A positive relationship was also found between perceived social support and belief in the power of technological advancement. This relationship suggests that people who are more likely to rely on others to

provide support and help them face the challenges of ageing are also more likely to believe that technological advancement will solve some of the problems associated with physical ageing. This relationship makes sense as people who are more likely to rely on others to help them deal with the changes associated with physical ageing, are probably more likely to want to believe that technology will solve the problems of physical ageing before they personally have to deal with them.

Finally a negative relationship was found between acceptance of physical changes and the power of technological advancement. This means that people who had lower levels of acceptance were more likely to believe in the power of technology than people who had higher levels of acceptance were. This relationship makes sense at a basic level as people who accept the changes associated with physical ageing will probably be less likely to need to believe in the possibility of technology solving the problems associated with physical ageing.

Although the results found in this section are not surprising, there is no research literature to compare them with. In order to confirm that the obtained relationships do exist and to find out why, more research needs to be done in this area.

## LIMITATIONS OF CURRENT STUDY AND FUTURE RESEARCH DIRECTIONS

The first limitation relates to the study's sample. Although the sample consisted of a large number of people spread over a very large age range (18 years through to 86), the participants were mainly older members of society. The mean age of the participants in this study was 51.1 years; this is much higher than the mean age of the general population which is 34.7 (Statistics New Zealand, n.d., Table 1). The gender balance in the present study is also unrepresentative, as 58% of the sample were male, whereas males only account for 49% of the general population (Statistics New Zealand, n.d., Table 1). The gender imbalance in the present study could probably be attributed to the fact that the majority of the participants were drawn from community service groups, which are predominately male organizations. The differences between the study's population and the general population mean that it is important to remember that the results from this study may be only generalisable to the population the participants were drawn from: students and community services groups of the wider Manawatu area. It would be beneficial for future researchers to tap a different group of participants in order to gain a more diverse picture of perceived control of the physical ageing process. It would also be beneficial to include a larger number of younger participants in the next study in order to allow a more representative view of the age differences between younger and older people.

As discussed in chapter one this study shares two of the limitations of previous studies, the correlational and cross-sectional nature of the research. The correlational nature of the research means that there are limits to the interpretations that can be made about some of the study's results. The researcher cannot be sure about the cause and effect relationships between the study variables. The cross-sectional design is a less important limitation as the investigation of age differences was only a minimal part of the study but still worth mentioning as the cross-sectional design means age comparisons will include cohort effects.

Another limitation is related to scale construction. The scales were developed by the researcher and had not been used in any previous research. This means the researcher cannot be sure how valid the scales are. Their validity could be investigated in various ways (Murphy & Davidshofer, 1998). For instance, participants' responses on the Previous Strategy Use scale, Previous Aid Use scale, and the Information Use scale, could be compared against relevant behavioural criteria.

Secondly there are some issues surrounding the content of the scales. The choice of items for the Intended Aid Use scale may not have been prudent. The first five items were taken from Thompson et al. (1998) American study on physical appearance, these items (drugs to treat hair loss, use of hair implants, having a face-lift, having liposuction, and use of dieting drugs) did not produce a great deal of response variability in the present study. The majority of the respondents indicated that they would either never

consider using the aid or that there was very little chance they would consider using the aid. It appears that although these items were appropriate for the American study, they were not appropriate in New Zealand where cosmetic surgery is not largely used, and the introduction of dieting drugs and drugs to treat hair loss are relatively new.

The opposite effect can be seen in the last four scale items: having a hip replacement, using a walking stick or frame, using a hearing aid and using reading glasses. Most participants responded that they would either probably consider or would definitely consider using the aids. In order to discover individual differences in people's intentions to use aids it would have been better to include scale items such as face creams and hair dyes that are likely to elicit more mixed responses.

It may also be helpful to redefine the Perceived Social Support scale. It could be helpful to reorganise the scale in order to ask what type of support people believe they could gain from particular sources, people might turn to certain sources. By doing this a more accurate picture of where the people individuals believe they can turn to get support and encouragement.

The current research did not explore any aspects of physical ageing related to sexual functioning. This was unfortunate because the data collected from the open-ended question in the aid section revealed that there was a lot of interest in the use of Viagra and lovers to control physical ageing. Future research may benefit from further exploration of this area.

Future research in this area could possibly benefit from exploring the link between perceived control over the physical ageing process and well-being. Thompson et al. (1998) study revealed that higher levels of perceived control over age-related changes to physical appearance were beneficial to a person's well being. It would be useful to discover whether this relationship exists with all aspects of physical ageing. If there is a relationship between these two variables it would then be plausible to design programmes which focus on increasing people's levels of perceived control over their physical ageing which would in turn increase a person's level of well-being.

## CONCLUDING COMMENTS

The present study aimed to extend research on perceived control into the area of general physical ageing. Several closely related topics were also studied. The Variables and their relationships were all investigated using a specially constructed questionnaire. While the study had several limitations, such as sample characteristics, and measurement instrument, it has identified several useful directions for applied and theoretical research.

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APPENDIX A

## Perceived control of the physical ageing process

## INFORMATION SHEET FOR PARTICIPANTS

My name is Marie Saywell, and I am carrying out this research as part of my Masterate study at Massey University. My work is being supervised by Helen Pennington, a lecturer at Massey University.

My research intends to look at how much control people believe that they have over the physical ageing process. The study will examine the use of various strategies and technologies which could aid successful ageing. We will also look at the influence of other people on the process of physical ageing, and the sources of information people use to find out about the physical ageing process.

If you agree to take part in this study you will be asked to fill in a questionnaire which will take approximately 20 minutes to complete.

Please remember that you do not have to participate in this study, and you are free to withdraw at any time, before the questionnaire has been returned. If you wish to participate please fill in the attached questionnaire. The information provided in the questionnaire will remain confidential, with only Marie and Helen having access. You will not be asked to provide any identifying information, and you do not have to answer any questions that you do not want to answer.

I invite you to participate in this research and encourage you to contact either Marie or Helen, if you have any inquiries regarding this research.

Helen Pennington
c/o School of Psychology office
Massey University
Private Bag 11222
Palmerston North

Email:H.R.Pennington@massey.ac.nz

Phone: 06 350 5799 (extn 2066)

Marie Saywell
c/o School of Psychology office
Massey University
Private Bag 11222
Palmerston North

[redacted]

# Control and Physical Ageing

Please answer the following questions, either by filling in the spaces provided or by circling the appropriate answer.

- What year were you born? 19____

- Gender: Male
  Female
- Please indicate your highest level of formal education:

Primary School

High School

School Certificate/ University entrance/Bursary/or similar.

Some University undergraduate papers

Trade certificate

Diploma

Degree

Other post-school qualification (Please specify)

_____

There are a number of physical changes that occur as people get older. People may have differing views on how much control they have over these changes.

- Please use the following rating scales to indicate how much control you think *people in general* have over the physical changes that often happen as we get older.

Please circle the appropriate answer. For example if you believe that it is impossible to control the development of wrinkles you would circle (1). If, however, you believe that people have a great deal of control over the development of wrinkles you would circle (5).

1. Development of wrinkles.
   (No control) 1 2 3 4 5 (A great deal of control)

2. Hair loss.
   (No control) 1 2 3 4 5 (A great deal of control)

3. Development of age spots.
   (No control) 1 2 3 4 5 (A great deal of control)

4. Weight gain.
   (No control) 1 2 3 4 5 (A great deal of control)

5. Hearing loss.
   (No control) 1 2 3 4 5 (A great deal of control)

6. Decreases in eyesight.
   (No control) 1 2 3 4 5 (A great deal of control)

7. Development of cataracts.
   (No control) 1 2 3 4 5 (A great deal of control)

8. Loss of balance.
   (No control) 1 2 3 4 5 (A great deal of control)

9. Increases in reaction times.
(No control) 1 2 3 4 5 (A great deal of control)

10. Decreases in sense of smell.
(No control) 1 2 3 4 5 (A great deal of control)

11. Decreases in sense of taste.
(No control) 1 2 3 4 5 (A great deal of control)

12. Loss of bone density.
(No control) 1 2 3 4 5 (A great deal of control)

13. Development of arthritis.
(No control) 1 2 3 4 5 (A great deal of control)

14. Development of osteoporosis.
(No control) 1 2 3 4 5 (A great deal of control)

15. Declines in muscle strength.
(No control) 1 2 3 4 5 (A great deal of control)

16. Increased blood pressure.
(No control) 1 2 3 4 5 (A great deal of control)

While some people may think it is better to try to control the physical changes associated with ageing, others may think it is better to just accept them.

- Please indicate the extent to which *you* think it is better for people in general to accept the following physical changes rather than try to control them.

For example if you strongly agree that it is **better to accept** the development of wrinkles you would circle (5). However, if you strongly disagree that it is better to accept the development of wrinkles, you would circle (1).

1. Development of wrinkles.
   (Strongly disagree) 1 2 3 4 5 (Strongly agree)

2. Hair loss.
   (Strongly disagree) 1 2 3 4 5 (Strongly agree)

3. Development of age spots.
   (Strongly disagree) 1 2 3 4 5 (Strongly agree)

4. Weight gain.
   (Strongly disagree) 1 2 3 4 5 (Strongly agree)

5. Hearing loss.
   (Strongly disagree) 1 2 3 4 5 (Strongly agree)

6. Decreases in eyesight.
   (Strongly disagree) 1 2 3 4 5 (Strongly agree)

7. Development of cataracts.
   (Strongly disagree) 1 2 3 4 5 (Strongly agree)

8. Loss of balance.
   (Strongly disagree) 1 2 3 4 5 (Strongly agree)

9. Increases in reaction times.
(Strongly disagree) 1 2 3 4 5 (Strongly agree)

10. Decreases in sense of smell.
(Strongly disagree) 1 2 3 4 5 (Strongly agree)

11. Decreases in sense of taste.
(Strongly disagree) 1 2 3 4 5 (Strongly agree)

12. Loss of bone density.
(Strongly disagree) 1 2 3 4 5 (Strongly agree)

13. Development of arthritis.
(Strongly disagree) 1 2 3 4 5 (Strongly agree)

14. Development of osteoporosis.
(Strongly disagree) 1 2 3 4 5 (Strongly agree)

15. Declines in muscle strength.
(Strongly disagree) 1 2 3 4 5 (Strongly agree)

16. Increases in blood pressure.
(Strongly disagree) 1 2 3 4 5 (Strongly agree)

People may use certain *aids* to help them control the changes associated with physical ageing.

- Please indicate how likely it is that you would use any of the following *aids* in the future to help *you* control *your* physical ageing?

For example if you believe that you would never consider using drugs to treat hair loss you would circle (1). If you believe that you would definitely consider using drugs to treat hair loss you would circle (5).

1. Drugs to treat hair loss.
(Would never consider) 1 2 3 4 5 (Would definitely consider)

2. Hair implants.
(Would never consider) 1 2 3 4 5 (Would definitely consider)

3. Face-lift.
(Would never consider) 1 2 3 4 5 (Would definitely consider)

4. Liposuction.
(Would never consider) 1 2 3 4 5 (Would definitely consider)

5. Dieting drugs.
(Would never consider) 1 2 3 4 5 (Would definitely consider)

6. Hip replacements.
(Would never consider) 1 2 3 4 5 (Would definitely consider)

7. Walking sticks or frames.
(Would never consider) 1 2 3 4 5 (Would definitely consider)

8. Hearing aids.
(Would never consider) 1 2 3 4 5 (Would definitely consider)

9. Reading glasses.
(Would never consider) 1 2 3 4 5 (Would definitely consider)

10. Please list any other aids that you might use to help control your physical ageing.

_____

_____

- Please indicate whether you have already used these aids to help control the changes associated with physical ageing, by circling the appropriate answer.

For example if you have used drugs to treat hair loss you would circle ***YES***. If you have not used drugs to prevent hair loss you would circle ***NO***.

1. Drugs to treat hair loss.

Yes No

2. Hair implants.

Yes No

3. Face-lift.

Yes No

4. Liposuction.

Yes No

5. Dieting drugs.

Yes No

6. Hip replacements.

Yes No

7. Walking sticks or frames.

Yes No

8. Hearing aids.

Yes No

9. Reading glasses.

Yes No

People may use various *strategies* to help them control the changes associated with physical ageing.

- Please indicate how likely it is that you would use any of the following *strategies* in the future to help control *your* physical ageing?

For example if you believe that you would never consider using a low fat diet to control the effects of physical ageing you would circle (1). If you believe that you would definitely consider using a low fat diet to control the effects of physical ageing you would circle (5).

1. Low fat diets.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

2. Low salt diets.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

3. High calcium diets.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

4. Calcium supplements.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

5. Exercise programmemes.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

6. Avoidance of loud noise.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

7. Staying out of the sun.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

8. Using sunscreen.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

9. Not smoking.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

10. Drinking little or no alcohol.
(Would never consider) **1** **2** **3** **4** **5** (Would definitely consider)

11. Please list any other strategies that you might consider using to help control your physical ageing.

_____

_____

_____

_____

- Please indicate whether you have already used these strategies to help control the changes associated with physical ageing, by circling the appropriate answer.

For example if you have used a low fat diet to help control the effects of ageing you would circle ***YES***. If you have not used a low fat diet to help control the effects of physical ageing you would circle ***NO***.

1. Low fat diets.

Yes No

2. Low salt diets.

Yes No

3. High calcium diets.

Yes No

4. Calcium supplements.

Yes No

5. Exercise programmemes.

Yes No

6. Avoidance of loud noise.

Yes No

7. Staying out of the sun.

Yes No

8. Using sunscreen.

Yes No

9. Not smoking.

Yes No

10. Drinking little or no alcohol.

Yes No

People may provide advice, motivation or support, for someone facing the changes associated with physical ageing.

- How much help do *you* think other people can give you with your physical ageing? (For example they might provide information or encourage you to take actions to help you age more successfully).

For example if you believe that doctors can provide no help with your physical ageing you would circle (1). If you believe that doctors can provide a great deal of help with your physical ageing you would circle (5).

1. Doctors.
(No help) 1 2 3 4 5 (A great deal of help)

2. Nurses.
(No help) 1 2 3 4 5 (A great deal of help)

3. Chemists (pharmacists).
(No help) 1 2 3 4 5 (A great deal of help)

4. Health professionals.
(No help) 1 2 3 4 5 (A great deal of help)

5. Friends.
(No help) 1 2 3 4 5 (A great deal of help)

6. Spouse or partner.
(No help) 1 2 3 4 5 (A great deal of help)

7. Please list any other people who you feel can provide help with your physical ageing.

_____

_____

There are many places people can learn about the changes associated with the physical ageing process.

- Please indicate how likely it is that you would use the following sources to learn more about the physical ageing process.

For example if you believe that you would be very unlikely to use advertisements to learn about the physical ageing process you would circle (1). If you believe that you would be very likely to use advertisements to learn about the physical ageing process you would circle (5).

***1.*** Advertisements.
(Very unlikely) **1** **2** **3** **4** **5** (Very likely)

2. Books.
(Very unlikely) **1** **2** **3** **4** **5** (Very likely)

3. Clubs and organizations.
(Very unlikely) **1** **2** **3** **4** **5** (Very likely)

4. Doctors.
(Very unlikely) **1** **2** **3** **4** **5** (Very likely)

5. Health promotional pamphlets.
(Very unlikely) **1** **2** **3** **4** **5** (Very likely)

6. Internet.
(Very unlikely) **1** **2** **3** **4** **5** (Very likely)

7. Magazines.
(Very unlikely) **1** **2** **3** **4** **5** (Very likely)

8. Nurses.
(Very unlikely) **1** **2** **3** **4** **5** (Very likely)

9. Radio.
(Very unlikely) **1** **2** **3** **4** **5** (Very likely)

10. Television.

(Very unlikely) 1 2 3 4 5 (Very likely)

11. Observation of people in your life, for example grandparents.

(Very unlikely) 1 2 3 4 5 (Very likely)

- Do you believe that technologies and advances in medicine will solve many of the problems associated with the physical ageing process in your lifetime?

(Very unlikely) 1 2 3 4 5 (Very likely)

- Compared to a person in excellent health, how would you rate your health at the present time? (Please circle appropriate answer)

Terrible

Very Poor

Poor

Fair

Good

Very Good

Excellent

Thank you for your participation in this research. Please return the questionnaire in one of the pre paid envelopes provided. If you wish to receive information about the study's findings please fill in the yellow form and return it to the researcher, in the second pre paid envelope.

If you wish to obtain information about the study's results, please provide the following information:

Name: _____
Address: _____
_____
_____
_____

In accordance with the Privacy Act the information provided on this form will not be used for any other purpose.

# APPENDIX B

Dear Sir or Madam

My name is Marie Saywell. I am a postgraduate student at Massey University, I am currently carrying out research on the control of the physical ageing process for my Masters Thesis in Psychology.

My research intends to look at how much control people believe that they have over the physical ageing process. The study will examine the use of various strategies and technologies which could aid successful ageing. We will also look at the influence of other people on the process of physical ageing, and the sources of information people use to find out about the physical ageing process.

If possible I would appreciate a chance to come and talk to you about the possibility of members of your organization participating in my research. My research is based around the completion of a questionnaire which I will bring along for perusal. If you believe that members of your organization would consider taking part in this research I can meet with you to discuss an appropriate way to proceed. I can be contacted through the following means.

Phone: [redacted]
Email: [redacted]
Postal Address: [redacted]

Yours sincerely

Maire Saywell