



Professionals for Visually Impaired Persons Training XL
and Knowledge Sharing

KnowProViP

HANDBUCH

Thema:

Ältere Menschen und Sehbehinderung



Offizielles Handbuch für den KnowProViP Kurs

Dieses Projekt wurde durch das "LEONARDO DA VINCI" Programm der Europäischen Union 2007 – 2009 kofinanziert.

Dieses Handbuch wird durch as KnowProViP Projekt-Konsortium veröffentlicht und ist das offizielle Kurs-Handbuch.

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Dieses Projekt wurde mit Unterstützung der Europäischen Kommission finanziert. Die Verantwortung für den Inhalt dieser Veröffentlichung trägt allein der Verfasser; die Kommission haftet nicht für die weitere Verwendung der darin enthaltenen Angaben.

Gedruckt und veröffentlicht:

August 2009 by Institutet for Blinde og Svagsynede, Denmark

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1 INHALT

| | | |
|-----------------|---|-----------|
| 1 | INHALT..... | 3 |
| I | ALLGEMEINE INFORMATIONEN FÜR DIE TRAINER | 4 |
| I.1 | ZIEL DIESES HANDBUCHS | 4 |
| I.2 | TEILNEHMER UND GRUPPE VORSTELLEN | 4 |
| 2 | ÄLTERE MENSCHEN – MERKMALE DES ÄLTERWERDENS UND DISKUSSION | 5 |
| 2.1 | ZIEL DIESES KAPITELS | 5 |
| 2.2 | BENÖTIGTE MEDIEN UND MATERIAL..... | 5 |
| 2.3 | METHODE | 5 |
| 3 | DER ALTERUNGSPROZEß | 6 |
| 3.1 | ZIEL DIESES KAPITELS | 6 |
| 3.2 | BENÖTIGTE MEDIEN UND MATERIAL..... | 6 |
| 3.3 | METHODE | 6 |
| 4 | ÄLTERE MENSCHEN UND IHR UMFELD..... | 7 |
| 4.1 | ZIEL DIESES KAPITELS | 7 |
| 4.2 | BENÖTIGTE MEDIEN UND MATERIAL..... | 7 |
| 4.3 | METHODE | 7 |
| 5 | ERFAHRUNGEN UND ANPASSUNGEN IN DER ARBEIT MIT ÄLTEREN MENSCHEN | 8 |
| 5.1 | ZIEL DIESES KAPITELS | 8 |
| 5.2 | BENÖTIGTE MEDIEN UND MATERIAL..... | 8 |
| 5.3 | METHODE | 8 |
| 6 | LICHT, UMFELD UND BARRIEREFREIHEIT | 10 |
| 6.1 | ZIEL DIESES KAPITELS | 10 |
| 6.2 | BENÖTIGTE MEDIEN UND MATERIAL..... | 10 |
| 6.3 | METHODE | 10 |
| 7 | COMPUTER UND INTERNET | 11 |
| 7.1 | ZIEL DIESES KAPITELS | 11 |
| 7.2 | BENÖTIGTE MEDIEN UND MATERIAL..... | 11 |
| 7.3 | METHODE | 11 |
| 8 | LITERATUR: | 12 |
| ANHANG 1 | PROGRAMM..... | 13 |
| ANHANG 2 | LITERATUR | 14 |

I Allgemeine Informationen für die Trainer

Dieser Trainingskurs richtet sich an Fachkräfte, die mit sehbehinderten älteren Menschen arbeiten und ein besseres Verständnis für Menschen in höherem Alter erlangen möchten. Insbesondere werden jene Fachkräfte angesprochen, die mit älteren Personen in Kontakt kommen und das Bedürfnis haben, ihr Wissen bezüglich des Alterungsprozesses zu erweitern und ein besseres Verständnis dafür zu bekommen, welche Bedürfnisse, Einschränkungen aber auch Potentiale ältere Menschen haben.

Das folgende Dokument führt Sie durch den Inhalt des zweitägigen Kurses. Es vermittelt Ideen, Ratschläge und Literaturquellen von Fachkräften aus dem Low Vision und geriatrischen Bereich. Es ist so ausgelegt, dass die Trainer während des Kurses ihre eigenen Inhalte und praktischen Erfahrungen einbringen können.

1.1 Ziel dieses Handbuchs

- einen Überblick erhalten über normale und pathologische Alterungsprozesse sowie typische altersbedingte Seheinschränkungen und damit verbundene Konsequenzen
- sensibilisiert werden für die Probleme die bei der Arbeit mit älteren sehbehinderten Menschen auftreten können
- Strategien kennen lernen, um mit diesen Problemen umzugehen
- in die Lage versetzt werden, die eigene Arbeitsweise und entsprechende Maßnahmen der Rehabilitation anzupassen

1.2 Teilnehmer und Gruppe vorstellen

Um in der Gruppe bekannt zu werden:

- Vorstellungsrunde zu Beginn des Kurses.
- Der Trainer stellt den Inhalt des Kurses und die Tagesziele vor.
- Das Training sollte anhand der nachfolgenden Kursstruktur erfolgen.

Der 1. Tag

2 Ältere Menschen – Merkmale des Älterwerdens und Diskussion

Trainer: Geriatrie

2.1 Ziel dieses Kapitels

Austausch mit allen Kursteilnehmern über ihre Erfahrungen mit alten und sehr alten Menschen und wesentliche Gesichtspunkte für die eigene Arbeit mit dieser Klientel. Besonderes Augenmerk wird auf die folgenden Themen gelegt:

- Körperliche und geistige Fitness
- Teilhabe am sozialen Leben
- Soziales Umfeld und Familie

Die Kursteilnehmer sollten auch jene Verfahren kennen lernen, die eingesetzt werden um den Alterungsprozess und evtl. Abhängigkeiten zu beurteilen (Diese Verfahren sowie die daraus resultierenden finanziellen Hilfen können von Land zu Land in Europa verschieden sein.). Messverfahren, Methoden, Indikatoren des Alterungsprozesses sind ebenfalls Gegenstand dieses Kapitels.

2.2 Benötigte Medien und Material

- Videos
- Interviews
- Fotos
- Beispiele, klinische Situationen

2.3 Methode

- Austausch von Erfahrungen zwischen den Kursteilnehmern in Arbeitsgruppen, Brainstorming, Diskussion.
- Einführung in Methoden zur Bewertung des Alterungsprozesses, Präsentation verschiedener Bewertungsmaßstäbe.
- Ein Video über Interviews mit älteren sehbehinderten Menschen könnte interessant sein und zur Diskussion anregen.

3 Der Alterungsprozeß

Trainer: Geriatriest

3.1 Ziel dieses Kapitels

Die Teilnehmer sollen in die Lage versetzt werden, zwischen physiologisch normalen und pathologisch bedingten Alterungsprozessen zu unterscheiden. Sie sollen ihren Kenntnisstand über unterschiedliche Aspekte des Alterungsprozesses erweitern.

3.2 Benötigte Medien und Material

- Fotos
- Power Point Folien

3.3 Methode

Information und Diskussion zu folgenden Schwerpunkten:

- *Der normale Prozess des Älterwerdens und die zugrunde liegenden biologisch-medizinischen Veränderungen:*
Zellen und Organe, die genetische Grundlage für die Länge des Lebens, Umwelteinflüsse etc.
- *Pathologische Alterungsprozesse:*
Demenz, Parkinson, Depression, Hirnschlag, Bluthochdruck, Diabetes, Arthritis, Osteoporose, den Alterungsprozess begünstigende Mehrfacherkrankungen bei älteren Patienten
- *Psychologische Gesichtspunkte im Alter:*
Wann fühlt man sich alt? Mit einem Trauma, Verlusten, Trauer etc. umgehen können. Psychologische Konsequenzen von eingeschränktem Sehvermögen und Sehbehinderung bei älteren und sehr alten Menschen.
- *Älterwerden und sensorische Systeme:*
Ältere Menschen sind unverhältnismäßig betroffen von Sinneseinschränkungen, sie werden verletzlicher und müssen mit Einschränkungen der Lebensqualität zurecht kommen. Visuelle Beeinträchtigungen und Höreinschränkungen können die Unabhängigkeit im täglichen Leben, die Mobilität und die Kommunikation mit anderen Menschen einschränken und zur Isolation führen.
- *Der soziale Alterungsprozess:*
Älterwerden schließt nicht nur das Individuum allein ein, sondern hat auch eine psychosoziale Dimension bei der Umgebung, Anpassung und Situationsbewältigung eine wichtige Rolle spielen.
- *Mehrfacherkrankungen im Alter:*
Sie bedürfen besonderer Aufmerksamkeit: Multidisziplinäre Herangehensweise, Betreuung der älteren Menschen in ihrem Umfeld, Hilfsorganisationen entsprechend der spezifischen Bedarfe der älteren Menschen. Facettenreiche Strategien zur Hilfe und multidisziplinäre Herangehensweisen sind für ältere Menschen sehr wichtig, um ihr Wohlbefinden und ihre Lebensqualität zu fördern.

- *Netzwerke zwischen Fachkräften:*
Netzwerke aus dem geriatrischen und Behindertenbereich können sowohl die fachliche Zusammenarbeit als auch die Betreuung von hoch betagten Senioren fördern, wenn diese von Seheinschränkung und Hörbehinderung betroffen sind.

4 Ältere Menschen und ihr Umfeld

Trainer: Geriatrie

4.1 Ziel dieses Kapitels

- Die Bedeutung des familiären und sozialen Umfeldes älterer Menschen kennen lernen.
- Verständnis dafür entwickeln, warum unser Handeln Möglichkeiten bietet, Abhängigkeiten zu vermeiden/hinauszuzögern.

4.2 Benötigte Medien und Material

- Beispiele von klinischen Fällen, Fallstudien
- Videos
- Simulation von alterstypisch doppelten Sinneseinschränkungen von Seh- und Hörsinn (falls nötig und dem Bedarf der Kursgruppe entsprechend)

4.3 Methode

- Die Konsequenzen von Seheinschränkungen im Prozess des Älterwerdens aufzeigen, Beispiele:
 - Mobilität
 - Freizeit
 - Lesen
 - Tägliche Aktivitäten
 - Das Risiko des Hinfallens
 - Kommunikation unter besonderer Berücksichtigung zusätzlicher Hörbeeinträchtigung
- Aspekte der Vorsorge erläutern:
Alles versuchen, um mögliche Abhängigkeiten soweit wie es geht aufzuschieben. Der Rehabilitationsansatz als Weg, Abhängigkeiten zu verhindern, insbesondere wenn das häusliche Umfeld einbezogen wird.
- Unterschiedliche Lebensweisen für ältere Menschen diskutieren:
das persönliche Umfeld erhalten, betreutes Wohnen, Pflegeheim.
- Die Notwendigkeit besprechen, Hilfe und Aktivitäten zwischen verschiedenen Fachkräften zu koordinieren und das persönliche Umfeld der älteren Menschen einzubeziehen.

Ende des ersten Tages

Rückblick auf den Tag, Diskussion und Bewertung.

Der 2. Tag

Der zweite Tag beginnt mit einem Überblick zu den Themen dieses Tages und einem Rückblick auf die vorherigen Kursstunden.

5 Erfahrungen und Anpassungen in der Arbeit mit älteren Menschen

Trainer: Expertengruppe:
Optometrist, Trainer für Lebenspraktische Fertigkeiten, Mobilitätstrainer, Psychologe, Rehabilitationsberater

5.1 Ziel dieses Kapitels

- Erfahrungsaustausch in der Gruppe und mit den Trainern
- Verständnis erlangen für die durch eingeschränktes Sehvermögen hervorgerufenen Probleme und das Verhalten älterer Menschen
- Zugang finden zu den Sehproblemen älterer Menschen
- Schlußfolgerungen: die eigene Arbeitsweise entsprechend der älteren sehbehinderten Klientel anpassen

5.2 Benötigte Medien und Material

- Power Point Präsentationen
- Simulationsbrillen, Augenbinden
- Gebrauchsgegenstände des täglichen Lebens (Servietten, Teller, Gläser, Bücher, Zeitschriften, Früchte etc.)

5.3 Methode

- Diskussion mit den Kursteilnehmern bezüglich ihrer Erfahrungen in der Arbeit mit älteren Menschen und wie/ob sie die Sehprobleme ihrer Klienten wahrgenommen haben
- Den Prozess der physiologischen Alterung der Augen besprechen.
- Über Indikatoren eines schlechten Sehvermögens sprechen, z. B.

| Indikator |
|--|
| Verschreibungen/Medikamente für Augen und Sehkraft |
| Hat Hilfsmittel wie: Lupe, Brille ... |
| Hat Probleme, Dinge zu erkennen |
| Beschwert sich über Licht (zu viel oder zu wenig), braucht zusätzliche Lampen oder schaltet das Licht aus oder macht die Vorhänge zu |
| Kann Leute nicht erkennen |
| Verletzt sich an Hindernissen, fällt oft ... |
| Ist häufig desorientiert, hat Probleme im Straßenverkehr |

| Indikator |
|---|
| Ist verunsichert, wenn er läuft |
| Möchte nicht ausgehen |
| Geht nicht mehr einkaufen |
| Ist unsicher beim Essen |
| Lehnt Mahlzeiten mit Fisch/Gräten/Knochen ab |
| Ist sich seines Äußeren offensichtlich nicht bewusst (Zusammenstellung von Kleidung, Farben, Frisur) |
| Lehnt tägliche Aktivitäten, wie Telefonieren, Lesen, Kartenspielen zunehmend ab |
| Hat Probleme die eigenen Sachen zu finden |
| Hat Probleme die Uhrzeit zu wissen oder zu erkennen |
| Verliert die Übersicht über den eigenen Haushalt |
| Lebt zunehmend isoliert |

- Sehprobleme erkennen. Erarbeitung von angemessenen Fragen, um im Gespräch mit älteren Menschen darauf aufmerksam zu werden. Beispiele:

Nahsicht:

- + Wann haben sie das letzte Mal Zeitung gelesen?
- + Können sie einschätzen, ob Rechnungen, die sie erhalten, korrekt sind?

Greifraum:

- + Haben sie Probleme zu erkennen, was auf ihrem Teller liegt?

Fernsicht:

- + Haben sie Schwierigkeiten, die Gesichter anderer Leute zu erkennen?
- + Können sie Leute in der anderen Ecke des Zimmers erkennen?
- + Haben sie Probleme, Treppen zu erkennen?

- Berichte von Fachleuten, wie und warum sie ihre Arbeitsweise mit älteren sehbehinderten Personen angepasst haben
- Praktische Übungen: Strategien im täglichen Leben mit Sehbehinderung umzugehen – Zubereitung und Servieren von Mahlzeiten, Mobilität und unabhängige Fortbewegung, Hobbies (Bücher, Kreuzworträtsel ...)

6 Licht, Umfeld und Barrierefreiheit

Trainer: Low Vision Experte

6.1 Ziel dieses Kapitels

- Verständnis entwickeln für den Zusammenhang zwischen Sehbehinderung und Lichtbedarf
- Einen Eindruck erhalten, wie geeignete Beleuchtung die Sicherheit und unabhängige Lebensweise fördern kann
- Verschiedene Lichtarten und Beleuchtungsarten kennen lernen
- Praktische Beispiele kennen lernen, Anpassungen der Beleuchtung für ein barrierefreies Lebensumfeld für ältere sehbehinderte Menschen

6.2 Benötigte Medien und Material

- Power Point Präsentationen
- Videos
- Lichtlabor

6.3 Methode

- Low Vision Experte berichtet zum Thema Licht:
 - ▶ Was ist Licht, Leuchtmittel, Farben und Lichtquellen, Beleuchtungsarten
 - ▶ Beleuchtung im Verhältnis zu eingeschränktem Sehvermögen, Kriterien für eine ausreichende Beleuchtung, barrierefreie Lebensräume
- Praktische Erfahrungen im Lichtlabor: Aktivitäten bei unterschiedlichen Lichtbedingungen (Schreiben, Kreuzworträtsel, Zeitung lesen...)
- Beispiele für Anpassungen im Lebensumfeld: Beleuchtung öffentlicher Plätze, Beleuchtung an Arbeitsplätzen und im Wohnraum (Fotos, Videos)
- Diskussion: Erfahrungen der Kursteilnehmer und ihre Ideen über Anpassungen im Arbeitsumfeld

7 Computer und Internet

Trainer: IT-Trainer mit Erfahrung für barrierefreie Standards für Computer und Internet

7.1 Ziel dieses Kapitels

- Verständnis darüber aufbauen, wie moderne Informations- und Kommunikationstechnologien die unabhängige Lebensweise von älteren Menschen fördern können
- Anpassungen und Hilfsmittel kennen lernen, die älteren sehbehinderten Menschen die selbständige Nutzung des Computers ermöglichen
- Geräte kennen lernen, die speziell für ältere Menschen angeboten werden (Festnetztelefone, Mobiltelefone, Fernseher etc.)

7.2 Benötigte Medien und Material

- Computer mit Hilfsmittelsoftware/-hardware z. B.:
 - + Vergrößerungssoftware
 - + Screenreader
 - + Braillezeile
- Internetzugang
- Elektronische Geräte (Telefone, Fernbedienungen etc.)

7.3 Methode

- Kurze Einführung durch den Trainer und Präsentation verschiedener elektronischer Geräte
- Praktische Erfahrungen am Computer:
 - Tipps and Tricks in Windows (Schriftgröße, Kontrast, Farbe, Bildschirmlupe)
 - Vergrößerungssoftware und Screenreader (Zoom Text, Lunar, JAWS, Webformator, NVDA)
- Information und praktische Übung mit elektronischen Geräten, die speziell für ältere Menschen angeboten werden

Ende des zweiten Tages

Rückblick auf den Tag, Diskussion und Einschätzung, Überblick und Resonanz Gespräch in der Gruppe, was haben die Teilnehmer gelernt, welche Ideen haben sie mitgenommen die sie in der eigenen Arbeit umsetzen möchten.

8 Literatur:

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Anhang 1 Programm

| Tag 1 | | | |
|--|--|------------|-------|
| Themen | Inhalt | Trainer | Zeit |
| Start | in der Gruppe bekannt werden | | 0,5 h |
| 1 Ältere Menschen – Merkmale des Älterwerdens und Diskussion | <ul style="list-style-type: none"> - die Erfahrung der Teilnehmer mit älteren Menschen diskutieren - die wesentlichen Charakteristika des Älterwerdens, körperliche und geistige Fitness, Teilhabe am sozialen Leben, soziales Umfeld und Familie - Methoden für die Bewertung von Abhängigkeiten im Alterungsprozess | Geriatrist | 1,5 h |
| 2 Der Alterungsprozeß | <ul style="list-style-type: none"> - der biologische Alterungsprozess - pathologische Alterungsprozesse - psychologische Aspekte des Älterwerdens - Sinneseinschränkungen im Alter (Hör- und Sehsinn) - soziale Alterung | Geriatrist | 2 h |
| 3 Ältere Menschen und ihr Umfeld | <ul style="list-style-type: none"> - Konsequenzen von Seheinschränkungen im Alter: Mobilität, Freizeit, Lesen, tägliche Aktivitäten, das Risiko des Hinfallens. Zusätzliche Aspekte durch Hörprobleme - Abhängigkeiten im Alter verhindern - Koordination von Hilfe | Geriatrist | 1,5 h |
| Rückblick | Gespräch, was haben die Teilnehmer am ersten Tag gelernt | Geriatrist | 0,5 h |

| Tag 2 | | | |
|--|---|---|-------|
| Themen | Inhalt | Trainer | Zeit |
| 4 Erfahrungen und Anpassungen in der Arbeit mit älteren Menschen | <ul style="list-style-type: none"> - sich einen Eindruck von den Sehproblemen der älteren Menschen verschaffen, Zusammenhang zwischen Seheinschränkung/Sehbehinderung und Alter, Diskussion der Erfahrungen in der Gruppe. - verschiedene Fachleute berichten darüber, wie und warum sie ihre Arbeitsweise an die ältere sehbehinderte Klientel angepasst haben, Hilfsmittel, Methoden, Lebensumfeld. | Expertengruppe: Optometrist, Trainer f. Lebenspraktische Fertigkeiten, Mobilitätstrainer, Psychologe, Rehabilitationsberater | 2,5 h |
| 5 Licht, Umfeld und Barrierefreiheit | <ul style="list-style-type: none"> - der Einfluss der Lichtbedingungen auf die visuelle Wahrnehmung im Alter - wie können Lichtverhältnisse im Umfeld der älteren Person angepasst werden. | Low Vision Experte | 2 h |
| 6 Computer und Internet | - elektronische Geräte und Tipps für die Handhabung von Computer und Internet bei eingeschränktem Sehvermögen mit Focus auf Nutzer ab 60+ | IT-Trainer mit Erfahrung in barrierefreien Standards für PC und Internet | 1 h |
| Zusammenfassung | Gespräch in der Gruppe und Rückblick was wurde gelernt | Trainer | 0,5 h |

Identity and balance

Everyone has a certain identity and everyone tries to maintain that identity, despite any kind or amount of ageing. Any help damaging the identity will not be appreciated. Besides the identity people also try to maintain certain balance in their life. That balance will not persist automatically.

Identity or self image is the idea or image one has about oneself. It is the combination of personality characteristics and behaviour styles which are experienced by one.

Identity characteristics

- A) Our personality is experienced as a constant: we know we change permanently during our life. A child's perception is totally different from an adult's one, like a student's perception differs from a parent's one, and an elderly perception differs from a middle-aged one. Nonetheless, we feel that we constantly remain the same person. We keep acting the same although situations differ all the time. Despite changes, permanency is a feature of identity.
- B) We experience ourselves as unique. It's difficult to exemplify the uniqueness of the personality to someone else. Everyone feels his or her own identical identity, which is totally different from others and which is fundamental to his or her behaviour and relationship to others.

It can be concluded that the notion of identity is diffuse. Therefore, it is meaningful to discuss a few parameters or components which shape the notion of identity. It is possible to describe many self images with limited different fundamental components. One person uses many typical X-components to form his or her identity (for example financial profit), while others wish many typical Y-components (many education for example). Important is that everyone has an identical and unique pattern of components which in mutual ways create an absolute individual identity. Tempelman (1986) lists eleven components:

1. Physicality
2. Personality
3. Gender
4. Personal history
5. Values and standards
6. Ideals
7. Activities
8. Participation, membership of a group
9. Knowledge, skills and level of education
10. Interests
11. Material property

Unstable balance

In every phase of their life many influences affect people. Those influences can make it difficult to maintain a balanced state. Depending on the individual, the amount and intensity of influences can be valued differently. Based on the balance of an individual Tempelman (1986) formulated the model of unstable balance. The model of unstable balance tries to view systematic at forces which can disturb or stabilise the balance. Following three parameters determine the stability of the balance:

1. Physical state
2. Mental state
3. Social state

These three parameters are in balance with each other. The term unstable balance refers to the fact that balance is not stable and changes when one of the parameters changes. So the parameters are not independent. Changes in one parameter can effect changes in the other. For example, social problems, like conflicts with family members or stress, can cause physical problems such as stomach ulcers. In addition, social problems such as loneliness can be a cause of mental problems like fears or phobias. One of the features of getting older is that the interdependence of the parameters increases. In contrast with younger people, influenza can have disastrous consequences in the elderly. In some situations a relatively small change in one parameter can cause a large change in the other. Complete loss of balance is the consequence (decompensate).

Ageing

In conclusion, people have an identity and their balance is maintained by their physical health, mental health and social capabilities. Both processes are influenced by ageing. Last statement can actually not be made as long as it is not clear what the definition is of ageing. Ageing and getting older are not identical. Ageing means that a complex of irreversible processes take place in the organism during life after maturity.

Still it is a complicated gerontologic issue whether physical changes can be attributed to ageing or not. Therefore age-related changes have to meet the following four criteria before it can be considered part of the basic ageing process. Age-related changes are:

- A) Universal. This rules out hereditary changes and environmentally induced changes.
- B) Intrinsic. It must be attributable to changes inside the organism.
- C) Progressive. Age-related changes generally occur gradually over time. During development processes occasionally slow down over time and stop at the time of maturity.
- D) Deleterious. Most age-related changes contribute to the increased probability of death. This criterion eliminates many developmental processes, because those age-related changes are not deleterious and do actually improve survival capacity.

Physical ageing

Ageing is as well a physical process as a mental process. Physical ageing is a loss of function of all organs. The more complex the (system of the) organ, the sooner loss of function will happen. Physical ageing can be caused by extrinsic factors, like quality and composition of nutrition. People who eat poor and limited food age more quickly than people who eat high-quality and diverse food. Climate is also an influential factor as ageing processes go slower in temperate areas than in extreme cold or hot areas. In addition, it is assumed that air pollution and other kind of environment pollution also contribute to ageing. The longer ageing occurs, the more susceptible people are to extrinsic factors, for example an increase of infections. Also intrinsic factors, like cell loss, exhaustion of essential elements (elasticity) and molecular changes can cause ageing. Intrinsic factors can also affect health by a speeding up ageing process, just like metabolic disorders (as diabetes or thyroid diseases) can lead more quickly to mental confusion, dementia and psychiatric disorders in the elderly.

Most prominent physical features of ageing are:

- 1) Integument: less elastic, drier and pigmentation spots.
- 2) Skeletal system: osteoporosis, decrease in length.
- 3) Muscular system: decrease in muscle mass, partly replaced by fat.
- 4) Circulatory system: arteriosclerosis (thickening and hardening of the arterial walls, thrombosis and cerebral infarcts).
- 5) Respiratory system: decrease in vital capacity (total amount of air that can be moved in and out of the lungs). Obesity, decreased elasticity, and changes within the blood vessels and skeletal system may contribute to this.
- 6) Nervous system: one year after birth the amount of nervous cells does not increase anymore. Research indicates a loss of weight of the brain of 6-7% between the age of 25 and 75. An important measurable neurological change is a reduction of nerve conduction velocity (10%).
- 7) Sensory system: changes in the visual, auditory, tactile and olfactory system.

Ageing of the eyes

Visual impairment is one of the fundamental ageing processes. As one ages, several degenerative changes can be observed in the structure and, therefore, the function of the eye.

Cornea

The cornea tends to flatten and often the corneal epithelium degenerates. Both changes can impair vision, the former through astigmatism and the latter through severe discomfort. (...)

Sclera

The sclera becomes less elastic with age and turns more yellow because of the accumulation of fat. A decreasing elasticity during the ageing process is also found in several other tissues.



Iris

Similar to other tissues, the iris thickens and becomes more rigid with age. This resolves in reduced dilatation and a smaller opening of the pupil. (Atropine induces pupil dilatation artificially.)

Anterior chamber

Due to the thickening and sclerosis of the trabecular meshwork in the angle of the eye's anterior chamber, there can be some obstruction in the canal of Schlemm, which drains aqueous fluid from the eye. Fortunately, a concomitant decrease in the production of aqueous fluid seems to take place, so that intraocular pressure is not normally elevated.

The lens

The lens of the eye continues to grow with age and enlarges, becomes stiffer, and tends to turn yellow. The result is a decreased accommodation and an increased opacity of the lens. The yellowing also results in a decreased colour perception of blue colours (Pokorny et al., 1979) and opacities lead to cataract and loss of contrast sensitivity.

Choroidea

Hyaline or colloid bodies develop in the layer of blood vessels known as the choroids and show up as rounded, yellow spots in the retina (Feeney-Burns et al., 1990).

Retina

As a combined result of the ageing processes in the lens and iris, less light reaches the photoreceptor cells of the retina, especially in the peripheral field and in the macula (reduces visual acuteness).

Vitreous humour

In later years, the body loses hydration and sometimes detaches from its connections to the retina, a situation which can eventually lead to a more serious retinal detachment from the choroids. An additional complication can be haemorrhaging of retinal blood vessels into the vitreous. Another common occurrence with vitreal degeneration is the appearance of opacities in the vitreous that take the form of dots, lines, or cobwebs and are referred to as "*mouches volante*" or "floaters". Although annoying to the individual, the presence of "*mouches volante*" ("floaters") are normal and not a serious health concern.

Combined result

The combined result of age-related changes in the iris, retina and media is that less light gets to the photoreceptor cells of the retina. Therefore, older people tend to need more intense light to see as well as they once did.

Adnexa

Dry eye is another age-related complication associated with the lacrimal apparatus. Dry eye is a condition resulting from a decrease in the secretion of tears from the lacrimal glands and is seen more often in elderly women than in elderly men. The result can be discomfort and possible inflammation. The usual treatment, hourly

administration of artificial tears, is not always a satisfactory solution to the condition.

Mental ageing

In addition to physical ageing mental ageing also occurs. Several relevant parameters of mental ageing are:

1. Evaluating the balance of life for the second time. First evaluation happens around middle age and chosen lifestyle will persist until it becomes dysfunctional, around the age of 65.
2. Change of life perspective. Functioning is effected by experiences in the past. Long-term thinking decreases and the notion of future perspective gets another meaning.
3. Maintain the identity. More energy is necessary to maintain the identity, because of all physical, mental and social threats.
4. Personality. A lot of research has been done on gerontology and it can be concluded that differences between individuals increase with age. There are more differences within age groups than between age groups. Human beings are unique, but older people appear to be even more unique. Overall life situation, including biographical and social elements, seems to be more crucial on personality characteristics than physical age is. Research suggests an integrated personality develops until the age of 50 or 60. The elderly tend to avoid risks and, although indications also point out a certain declining flexibility, this tendency is not equal to rigidity. In problematic situations they prefer known solutions, even if they are inactive.
5. Intelligence doesn't increase or decline with age, but changes. In particular, the speed related parts of intelligence are affected by nervous system changes. Verbal intelligence remains unchanged or even increases with age. Intelligence at an older age depends on the following factors: original intelligence, education, stimulating (work) environment, health (less healthy people score lower on all parts of intelligence) and a positive attitude toward the future.
6. Ageing includes a decrease of memory and the ability to learn. Problematic ageing, which can be caused by loneliness, partner loss or depression, is associated with an increase in mental confusion. There are a significant number of single elderly with feelings of loneliness and insecurity, and elderly with mourning, loss and depressive problems. Related confusion is marked by:



- Tempo loss: slower formulations, apathy and loss of initiative.
- Difficult imprinting: talk a lot about the past and rely on old solution strategies, which can be wise as well as rigid.
- Emotional instability: a diminishing *perception*, depressive features increase suicide chances.

Ageing of the visual function

Age-related sensory and perceptual changes can greatly influence daily functioning. Keep up a common lifestyle and maintaining balance can be very difficult, and ageing processes may influence these. Following ocular functions change with increased age and lead to visual impairment:

Visual acuity

It is presumed visual acuity declines gradually in a linear way between the age of 30 and 80. A famous longitudinal research at Fozzard (University of Baltimore, USA) tested a randomized population and demonstrated an average visual acuity of 1.4 at 25-year old people. Most people older than 80 have a visual acuity just above 0.5 and 12 % have a visual acuity of 0.4 or less. As a result of decreased visual acuity, road signs and instructions, for example, have to be closer in order to be read. Same counts for rephrase accommodation, but most reduction occur between the age of 45 and 70.

Contrast sensitivity

Visual acuity is investigated with the help of *low vision charts*. These charts measure someone's ability to distinguish between subtle details in a situation with optimal lightning and maximum contrast. Such a situation hardly ever occurs in daily life because the contrast of lightning is much lower then. The contrast sensitivity value is the required brightness difference between the object and its background to recognize an object. That difference grows with age. Studies have shown that, with low contrast photos, the elderly have more difficulties with recognizing faces. Significantly more time was needed before recognizing. Marron and Bailey (1982) demonstrated that deteriorated mobility, caused by visual impairment, more often is a result of low contrast sensitivity or a small vision field, than low visual acuity. When someone can not judge the depth of steps anymore, for example, it is more often a result of contrast sensitivity than of low visual acuity.

Luminance

As mentioned before, a result of changes in the media and iris is that less light reaches the retina.

This can partially be compensated by increasing the illumination in the environment or using light separately. Even with a common visual acuity, a typical sixty-year-old person requires approximately twice as much illumination as does a twenty-year-old. A typical eighty-year-old even needs approximately three or four times as much. During counselling, sometimes an optometrist prescribes visual aids in a different lighting situation as the home environment. Subsequently the visual aids may not have the right effect. Hence, it is important to take into account the lighting of the home environment.

Practical consequences of age-related changes in visual acuity, contrast sensitivity and luminance become clear when drivers were asked to read road

signs at night. The 60-and-over-age group required 75% less distance to read a road sign than people around the age of 25.

Colour vision

Research has consistently reported, as a result of a yellowing lens or retina affections (as glaucoma), a differential loss of discrimination for the colours of short wavelengths, such as green, blue, and violet. Colours with longer wavelengths, such as red, orange and yellow, may seem less faded (Pokorny et al., 1979).

Depth vision

Another important aspect of human vision is depth perception. The localization of objects in the visual field can be made using different cues of relative object size, overlay of near or far objects, light, shadows, and differences in colour and texture. Interpreting and integrating different visual stimulants is usually an unconscious process and provides a lot of information about the person related to his environment. To move from one point to the other this is essential. A loss of depth vision can have negative consequences to mobility, especially at elderly, when falling can lead to severe complications. Instead of age, it is reliable that impaired depth vision is a function of the parameter reduction mentioned above.

Physiological changes have functional consequences. A few will be exemplified below.

Perception

One of the most obvious aspects of reduced visual perception is the reduced reading speed, usually noticeable when reading subtitles. Elderly frequently complain that, as a result of reading difficulties, there is no time left to see the images. Also changes in the other sense organs contribute to vision difficulties, like hearing, smell, taste and touch (reduced smell, taste and hearing of high and low). The individual can become isolated because of sense reduction, and that may lead to complex psychological reactions as depression, apathy and loneliness.

Another aspect is more difficulties with accomplishing complex visual functions. Complex visual functions include organizing, processing and interpreting of visual information. Visual searching problems derive from ageing. More time is needed to scan the environment and filter relevant information (as searching a grandchild on a group photo). Elderly are presumed to have more problems with ignoring irrelevant stimuli.

Different studies demonstrate significant changes in visual perception of more complex patterns at ageing (Ordy & Brizzee, 1979). Visual perception does not only refer to recognizing complex patterns, but also to visual memory and visual learning. However, how ageing is related to brain changes, personality changes or psychosocial changes is unclear.

Prevalence of visual impairment and blindness

In the Netherlands extensive research has been carried out examining physical disabilities using a sample of 55,000 of all ages. (CBS and Nimawo, 1990). Respondents were asked to fill in a questionnaire about bodily functions and arrange them according to importance. 86% of the participants rated visual faculty as most important. The research also indicated that over 30% of the participants lacked something physically. These participants were then questioned orally to evaluate whether they met the criteria of disability. Different questions determined also how serious the disability was. Regarding visual impairment, people could choose the following statements:



- a. I only can distinguish light from dark.
- b. I cannot read large headlines or distinguish illustrations.
- c. I cannot read usual headlines (10 pts. letters).
- d. I cannot recognize someone's face on the other side of the room.
- e. I have (some) difficulties with seeing.
- f. I do not have difficulties with seeing.

When a or b was chosen, the researchers called the visual impairments 'extremely severe', c or d was called 'severe', e 'light' and f 'no impairment'.

Table 2 shows that, extrapolated to the total population, 625,000 people lack something visually. Even 0.4% of the population (59,000 persons) assessed their visual impairment as extremely severe. Furthermore, table 3 shows an age dependency: older people report more problems.

Besides visual defects, the research also focussed on walking impairments, hearing impairments and overall fitness. Table 3 also shows that impairments increase with age. Combinations of physical and visual impairments are shown in table 3b. Within the categories 'severe' and 'extremely severe' visual impairment (estimated at 158,000 persons), 56.9% reported at least one additional impairment. The research suggests that a substantial percentage of people who visit the optometrist for visual impairment also have other physical impairments, which is important with counselling. It appears that in approximately 18% of cases, the advice given is inadequate, like using the ears more than before through taped books.

Remarkable in the CBS- and Nimawo-research is the almost consequent gender difference. At every age women show more often impairments than men. However, the higher the age, the smaller that difference. In the age category 'older than 85' men even score higher than women.

Elderly in need of help

The research mentioned above was based on a random population. A different research (Hoogmoed et al., 1990) was typically focussed on elderly in need of help. On a geriatric department in a general hospital (GAAZ) 99 elderly were tested on the prevalence of visual disorders. Hospitalized participants entered the hospital because of other diagnosis than visual impairment, which makes the research representative for elderly on a GAAZ with co morbidity. Also patients with light to moderate memory disturbances were included. 64 Participants did not report visual complains, 30 participants did and 5 participants reported an unclear answer. 73% of the group who reported 'no visual disturbances' (47 persons) had a normal vision. Remaining 27% is noticeable visually impaired. The participants who did report visual disturbances (30 persons), 67% of them was diagnosed with an evident handicap and 33% was not.

Hoogmoed correctly concludes that the questionnaire is not a reliable method to discover visual impairments. It is remarkable that little to no relation exists between visual impairment and problems with daily activities and mobility.

An odd phenomenon with of age diseases and disorders is the difference between the professional's diagnosis and the individual bodily experience. The amount of professional diagnosis shows little correlation with the subjective well being. Recent research shows that approximately 50% of people above 65 evaluate their health as 'well'. Among those who report health problems, just retired men and women feel less well than the elderly above 80 years old. Just retired men



feel less well and the eldest men most well. So, elderly above 80 years old evaluate their health more positively than younger elderly. A clear positive correlation exists between objective diagnosed diseases and age. People above 80 years old have significantly more diseases than people around 65 years old. A clear (second) correlation was found between bad physical health, bad mental health and reduced social networks. In other words, lonely elderly report worse mental health and have significantly more diseases than elderly who have social contacts on a daily basis.

Prevalence of visual impairment and blindness in the Dutch elderly

As shown by the study of Hoogmoed et al., a difference between objective impairments and subjective limitations accounts especially in the elderly. Hence, questionnaires focused on the opinion of the (elder) participant indicate subjective experience instead of an objective diagnoses.

An extensive study has been done in Rotterdam among the population above 55 years. They attempted to abolish the methodological complications of self report as mentioned above. In all 7.983 participants were questioned about possible vision problems and 6.775 of them were extensively ophthalmological examined. The ophthalmological examination includes refraction, *visusbepaling*, *oogdrukmeting*, *spleetlamponderzoek*, *fundusscopie*, *fundusfotografie* and eye-range research. With this, the research is the only elaborated study in the Netherlands which collects both subjective self report data and objective ophthalmologic data. The study no longer defined visual impairment and blindness by subjective data, but the principle is the objective ophthalmologic data. The latter are tested on the WHO-criteria of visual impairment and blindness. Mentionable is the Working group on the prevention of blindness, who invented the WHO-criteria, mainly includes ophthalmologists. It is thought that the criteria are too strict because some people who are not able to engage in certain activities because of visual impairment do not meet the criteria. Because of this criticism and in comparison with other studies the authors use the US-criteria of visual impairment and blindness. A visual acuity between 0.5 and 0.1 on best eye means visual impairment and a visual acuity below 0.1 on best eye means blindness.

As shown in table 5, according the WHO-criteria, 1.9% of the participants in the Rotterdam study is visually impaired or blind, and according to the US-criteria 4.3% is. It is interesting to combine these results with Klaver et al.'s research (1998) and the population prognoses of 1993 (CBS), and to calculate the extrapolated amount of visual impaired and blind Dutch elderly. An additional complication is that the middle variant of the prognoses only includes people older than 65 years old. In 2000 this is 13.8% of the population (over 2.2 million). When leaving the youngest category of Klaver et al.'s study out of consideration, an estimation of people above the age of 65 can be made. Dependent on the (WHO-

or US-) criteria, between 2.2% and 5.9% is visually impaired and between 0.7% and 1.1% is blind. In all, this means that between 64,000 and 154,000 people above 65 are visually impaired or blind, which does not differ a lot from the estimation of the CBS- and Nimawo research (158,000 of the population). Klaver et al. mention their estimation has a somewhat low prevalence because of their population, and because people who did not respond appear to be relatively more often visually impaired than people who did respond.

In the Rotterdam study, a gender difference in prevalence is also examined. Different to the CBS- and Nimawo research, no significant gender difference of

visual impairment has been found in this study. Above the age of 55, women and men are equally visually impaired.

Causes of visual impairment and blindness in the elderly

Table 6 shows that cataract is the main cause of visual impairment in elderly, like former research also indicated. Generally, it is believed that cataract is not a main cause of visual impairment anymore because of the current availability of good therapy. Klaver et al. concluded that more people with cataracts than presumed do not visit an eye-doctor. A more active ophthalmological policy may prevent visual impairment by cataracts. Focussed on the causes of visual impairment of people who visit a low-vision practice, many people with cataracts will not consult because of visual aids.

Second distinct issue is that diabetic retinopathy is less often a cause of visual impairment than it was thought. The authors emphasize diabetes mellitus does appear often, but it is not an important cause of visual impairment.

Conclusion

Adaptation of visual impairment is very diverse in the elderly and the intensity of visual deterioration varies per individual. That is why it is not only important to know the intensity of visual deterioration, but also to focus on the effects of visual deterioration on daily functioning (Rumney et al., 1994). The process of managing the deterioration and seeking to master the conflicts of daily functioning is referred to as coping.

Disorders as reduced *scherp zien (contrast sensitivity?)*, reduced colour vision and reduced depth vision do not necessarily lead to enormous limitations, but from a psychological point of view they do can have radical social consequences. Often certain adaptation occurs spontaneous when deterioration is noticed. When adjustment appears to be insufficient, low-vision visual aids, coping skills and environmental adaptation can maintain an acceptable balance for a long time, promoting independent functioning. Verstraten (1993, 1994) notices correctly that it is important that eye care specialists and service providers inform the elderly about possible visual assistance and aids, and motivate them to use the low vision devices. After all, only when knowing the possibilities, good decisions can be made.

Great variance exists among the elderly concerning plasticity, social expectations and desires about daily tasks. Therefore, professional attention does not only need to focus on measuring visual abilities and suggesting visual aids, but especially focus on lifestyle, interests and personal goals of the elderly person. For example, focus on the activities of the individual that he or she would like to, and is able to, manage.

The assumption that reduction in visual abilities always leads to the same limitation in activities is not true, especially for the elderly.

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Tables

| Year | 1990 | 1995 | 2000 | 2005 |
|-------------------|------|------|------|------|
| Older than 65 (%) | 12,5 | 13,4 | 13,8 | 14,2 |
| Expension index | 100 | 107 | 110 | 114 |
| Older than 45 (%) | 33,5 | 36,2 | 38,2 | 40,6 |
| Expension index | 100 | 108 | 114 | 121 |

Table 1. Middle variant of obsolescence of the Dutch population (CBS, 1993). Expected percentages of the population above 65 years old and above 45 years old.

A) Visual Impairments. To determine the seriousness, participants could choose one of the following answers.

Extremely severe

- a. I only can distinguish light from dark.
- b. I can not read large headlines or distinguish illustrations.

Severe

- c. I can not read usual headlines.
- d. I can not recognize someone's face on the other side of the room.

Light

- e. I have (some) difficulties with seeing.

B) Percentage of the respondents (sample 55,000) with visual disturbances, and amount of people extrapolated to the total population.

Value judgement
of the visual
impairment
Amount

| | Answer | % |
|----------------------------|--------|-----|
| Extremely severe 16,000 | a | 0.1 |
| Extremely severe 43,000 | b | 0.3 |
| Severe 70,000 | c | 0.6 |
| Severe 29,000 | d | 0.2 |

| | | |
|---------|---|-----|
| Light | e | 3.4 |
| 467,000 | | |
| Total | | |
| 625,000 | | |

Table 2. (CBS and Nimawo, 1990).

A) Percentage of respondents with physical impairments per age-group. The total amount of people was 100% in every sample group.

| Age | Vision | Audition | Walking |
|---------|--------|----------|---------|
| Overall | | | |

fitness

| | | | |
|-------|------|------|------|
| 25-34 | 0.7 | 0.4 | 0.7 |
| 0.8 | | | |
| 35-44 | 0.4 | 0.9 | 1.1 |
| 1.0 | | | |
| 45-54 | 0.9 | 1.9 | 2.0 |
| 2.6 | | | |
| 55-64 | 1.4 | 2.5 | 3.9 |
| 5.6 | | | |
| 65-74 | 3.1 | 5.1 | 8.4 |
| 8.9 | | | |
| 75-84 | 7.1 | 15.6 | 18.5 |
| 15.2 | | | |
| 85+ | 24.2 | 35.0 | 45.3 |
| 17.1 | | | |

B) Percentage of extremely severe visual impaired people, with additional impairments.

| Difficulties with: | % |
|-----------------------------|---|
| Walking | |
| 25.7 | |
| Rising or sitting | |
| 14.3 | |
| Keep standing up or sitting | |
| 22.6 | |
| Arm- and hand use | |
| 13.0 | |
| Audition | |
| 18.0 | |



Speaking
 4.2
 Overall fitness
 19.0

Table 3.

| Age (years) | Visual impaired women (%) | Visual impaired men (%) |
|-------------|---------------------------|-------------------------|
| 25-34 | 0.4 | 0.4 |
| 35-44 | 0.6 | 0.2 |
| 45-54 | 1.2 | 0.6 |
| 55-64 | 2.1 | 0.7 |
| 65-74 | 4.0 | 1.9 |
| 75-84 | 7.8 | 5.8 |
| 85+ | 22.9 | 27.2 |

Table 4. Gender differences in visual impairments per age category.

W.H.O. (1979, 1992) criteria:

0.3 > visual acuity > 0.05 low vision
 20° > visual field > 10°
 0.05 > visual acuity blindness
 10° > visual field

U.S. Criteria

0.5 > visual acuity > 0.1 low vision
 0.1 > visual acuity blindness

| Age | impairment Amount | Blindness | | Visual |
|-----------|----------------------|-----------|------|--------|
| | | W.H.O. | U.S. | W.H.O. |
| 55-64 | 2,561 | 0.1 | 0.2 | 0.1 |
| 65-74 | 2,408 | 0.2 | 0.2 | 0.4 |
| 75-84 | 1,398 | 0.6 | 1.4 | 2.6 |
| 85+ | 408 | 3.9 | 5.9 | 11.8 |
| Total 55+ | 6,775 | 0.5 | 0.8 | 1.4 |



| | | | | |
|-----------|-------|-----|-----|-----|
| 3.8 | | | | |
| Total 65+ | 4,214 | 0.7 | 1.1 | 2.2 |
| 5.9 | | | | |

Table 5. Prevalence of visual impairment and blindness among the elderly from (the neighbourhood of) Rotterdam. Numbers are percentages of the age groups (age group is 100%) (Klaver et al., 1998).

| | Blindness (visual acuity < 0.05) | Visual impairment (0.3 > visual acuity > 0.05) |
|-----------------------------------|-------------------------------------|---|
| Age-related macular degeneration | 58 | 25 |
| Cataract | 6 | 36 |
| Primary <i>open-hoek</i> glaucoma | 8 | 2 |
| <i>Myope</i> degeneration | 6 | 6 |
| Optical neuropathy | 6 | 1 |
| Retinitis <i>pigmentosa</i> | 3 | - |
| Diabetic retinopathy | - | 1 |

Table 6. Main causes of visual impairment and blindness among people above the age of 55 and from (the neighbourhood of) Rotterdam Numbers in the left column are percentages of the total amount of blind people and numbers in the right column are percentages of the total amount of visually impaired people.