



Strategic Promotion of Ageing Research Capacity

Understanding the Older Worker in Construction

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Older workers in the construction industry are committed, valued and appreciated for their skills, but in a commercially competitive industry with a plentiful supply of cheap labour this can seem to count for little. Heavy, physical workloads added to the normal effects of ageing can lead to premature physical decline and ill health, which often results in workers leaving the industry before retirement age.

A series of interviews with workers in the construction industry identified the impact of working conditions on their health and career paths. Poor working conditions coupled with widespread self-employment has created an environment where when major physical injuries are suffered by the individual it is possible the consequent financial burden may be largely met by the taxpayer rather than by industry. Direct employment is associated with a more supportive and favourable environment for older workers. The opportunity for designing tools and procedures more suited to the older worker has so far been largely overlooked. This is possibly due in part to the fact that workers, especially those paid on 'piece-work', often think that labour-saving equipment and safer practices will slow down productivity.

Key findings

- Older workers in construction are valued by the industry. However, there is often a trade-off between skills/experience and physical fitness.
- It is unclear how the financial cost from losing a member of the workforce to illness is met; particularly for self-employed workers.
- There is a general acceptance within the construction workforce that injury and ill-health go hand-in-hand with the job.
- Regardless of the increased risk of injury and ill health, older workers want to stay in the industry.
- Employment tenure appeared to be one of the most important issues affecting older workers. Being directly employed rather than self-employed is felt to be associated with a more favourable working environment for the older worker, especially in terms of the impacts on ill-health and early retirement.
- It is not known whether workers who fill the gaps created by older workers leaving the industry have the same skill level as those who leave, and this may result in a skills shortage.
- Therefore, in a competitive industry where cheap labour is readily available, there may be little incentive for firms to bear the costs of making the workplace less hostile for the older worker.

Introduction

The Issues

Typically, construction workers undertake work which is physically demanding and stressful, often for long hours in hazardous conditions. Accident rates are high and workers “wear out” more quickly than in other industries. The HSE has estimated that work-related accidents and illness in the industry account for 8.5% of project costs.

The combined effects of physical work, the normal ageing process, and the nature of employment within the industry, results in many people being unable to continue work past the age of 50.

Although older workers in the construction industry accumulate invaluable job-related knowledge and experience, there are no published studies on how to improve their working environments so that they can continue to work in the industry.

The Background

The nature of construction work presents specific problems for the older worker. In addition to the health problems associated with normal ageing, heavy physical workloads exacerbate physical decline. Workers in the construction industry are recognised as suffering higher rates of injury, illness and fatality than those in other occupations.

Most cases of early retirement in the construction industry are due to chronic illness, with symptoms appearing long before retirement is taken. The most common forms of chronic illness are disorders of the musculoskeletal system, which are due to the heavy physical burden of the work. For example, physically strenuous work and the moving, lifting and carrying of heavy weights are associated with a significantly higher risk of developing back pain and musculoskeletal disorders. However, other adverse conditions result from a number of other risk factors, including climatic factors, noise, dust, stress, repetitive motion, and vibration.

The Aims of the Study:

- **to examine** the relationship between ageing and construction work;
- **to understand** the needs and abilities of older construction workers, and how the working environment may be improved to accommodate those needs;
- **to explore** potential interventions that may ease the physical workload of older construction workers and prevent early retirement from the industry.

The Study

The research used qualitative methods to understand the issues that are perceived to impact upon the health and career paths of older workers. To achieve this, in-depth semi-structured interviews and small focus groups were conducted with 55 participants occupying several roles in the industry. These included health and safety managers, site managers, older workers (some of whom were retired), union representatives, younger workers, and equipment and materials suppliers. All had at least 10 years experience of the industry. The older workers were aged between 41 and 64, and the retired workers between 72 and 79.

Interview schedules were developed from the existing literature, and focused specifically on:

- health problems associated with older workers;
- previous experiences of injury and ill health;
- managing heavy physical workloads,
- strategies and equipment used to deal with the workload;
- barriers to use of equipment;
- other concerns and issues relating to ageing in the construction industry.

The HSE 2005/6 BMRB survey was used to confirm the validity of the sample and the findings as well as for further analyses.

Findings

Valuing the Older Construction Worker

A range of issues that affect older workers in construction have emerged. Some relate to the way the industry is organised, others to the nature of construction work. They combine to create an environment which can be hostile to the older worker. The key issues which were identified are summarised below.



Positive Value

The value placed on older workers should not be underestimated. Both management and workers themselves recognised the value of retaining older workers within the industry.

- *Skills* – Older, experienced workers bring with them invaluable knowledge and skills of their trades. A significant decline in apprenticeships in the construction trades has led to a reduction of the skill base. As older workers retire, they are not being replaced by similarly skilled workers. There is currently a recognised skills shortage within the industry.
- *Workmanship* - Older workers are thought to take greater pride in, and to produce higher quality work than younger workers.
- *Work ethic* – Older workers are perceived by both management and workers as having a better ‘work ethic’ and mentality than younger workers. For example they are more likely to turn up for work even when sick whereas a younger worker often would not.

Negative Value

The nature of construction work has changed over the past two decades. A working environment which is hostile to the older worker has been created by an increased reliance on

pre-assembled materials, for example staircases and roof trusses, and ever-tight profit margins.

Older workers are perceived to be slower and unable to keep up with the pace set by the younger workers. The ability to hit targets is crucial for construction companies and site managers who either need to complete jobs on schedule or suffer financial consequences. This negative issue is perceived to far outweigh the positive attributes offered by the older worker.

In addition, older workers were seen to be resistant to change and in many cases adopted inappropriate safety behaviours.

Industry-level Issues

The organisation of the construction industry as a whole is perceived to have implications for creating a more supportive and favourable working environment for older workers.

- *Direct versus indirect labour:*
Employment tenure was perceived to have a direct effect on workers’ experience of the construction industry. Much of the industry employs their workforce through subcontractors with many workers being self-employed (indirect labour). The reason for this set-up is due to earlier economic downturns causing many contractors to be reluctant to take the ‘risk’ of employment of a direct workforce. Employers who do employ their workforce directly are perceived to ‘look after’ their older workers. In general, they find them less physically demanding tasks when necessary, and are obliged to provide ‘sick pay’ when a worker is unable to work through ill-health/injury. Being self-employed and finding work through subcontractors has a negative effect on the experience of older workers. Workers are perceived to be chosen for a job on the basis of being fit and able to complete the job quickly. Allowances are not necessarily made for the slower pace of the older worker. If a self-employed worker is unable to work through ill-health, they do not get paid, and must therefore rely on private insurance or state benefits. Most of the

older participants in the study reported that they would prefer to be 'on the books' (employed directly).

- *Client responsibilities:* The construction industry is highly competitive. This financial pressure results in extremely tight margins. There is a perception that these small margins make it financially impossible to make allowances for the physical 'slowness' of the older worker. A slow worker is perceived to cost more money than a fast worker, which is largely irrespective of the quality of work produced. Because of the competitive tendering process, many contractors are reluctant to bear this cost. It was suggested by several participants that the only way to address this issue would be for the client to bear the cost.
- *Pay structure:* Much of the construction industry relies on 'bonuses, or piece work - work undertaken at a prior agreed price'. This type of payment system which gives financial rewards for speed, mainly appeals to younger, physically fit workers. There is a belief that the quality of the work suffers through this type of payment system. Many older workers reported that they would prefer payment at a 'day rate' because the focus becomes on quality rather than speed.
- *Employment flexibility:* Older workers want to stay in the industry. However, as they get older, many prefer to work more flexibly, either working part-time or on day rates.

The Nature of Construction Work

Preventing chronic ill-health and injury in construction workers is vital for reducing early retirement from the industry.

Attitudes to Health and Safety

- Workers accept ill-health and injury as 'part of the job'. Early retirement is an accepted part of the industry.
- Many workers feel the Health and Safety regulations are 'over-the-top', and prevent workers from doing their job fluently.
- There was a prevailing attitude that nothing could be done to make the job less physically strenuous, and that the job is inherently hard. Management perceives older workers to be less likely to follow safe practice for self-protective

behaviours, for example wearing PPE (Personal Protective Equipment) and it is possible that these issues are linked. However, when encouraged to talk more about their specific job tasks, older workers *were* able to think of improvements to their own job tasks which could otherwise cause or exacerbate physical injury or ill-health.



Health problems and potential interventions are trade specific.

- [Joiners](#) perform repetitive tasks, for example hammering and the use of screwdrivers. These can cause problems in the joints, such as tennis elbow, and can be made easier by using power tools. For example, using battery drills instead of pump screwdrivers and using nail guns instead of hammers. However, since many workers are expected to provide their own tools, the cost of power tools can sometimes be a disincentive to their use.
- [Bricklayers](#) are constantly manually handling heavy materials, which often results in the development of musculoskeletal disorders. Manual handling aides and lifting devices can make some of this work easier. Older workers would prefer to use lighter materials rather than lifting devices though, which are regarded as a hindrance to fluency of work. Forklifts are now more readily available to assist with lifting tasks, but this only eliminates the need for a labourer to carry materials to the bricklayer. Furthermore, this gives the bricklayer the additional job of loading/unloading, creating an extra physical burden.
- [Plasterers](#) perform wet work that can result in rheumatic problems. In

addition, the repetitive motion involved in plastering tasks often results in aches and pains. However, alternative materials and methods that reduce the amount of wet work that is required for the job are available, for example drylining. Most large projects now use drylining, mainly due to productivity advantages, but smaller projects and smaller companies tend to use wet plastering methods.



Barriers to Intervention

There are many barriers to the effective deployment of interventions designed to alleviate the physical nature of work in the construction industry including:

- *Personal responsibility* - Some workers are reluctant to wear Personal Protection Equipment (PPE) or use appropriate safety equipment, as they feel this affects how they do the job.
- *Financial responsibility* - Because of the way the industry is organised, financial responsibility for PPE and equipment is sometimes unclear. Self-employed workers must provide their own tools, but the contractor provides the materials. If the appropriate materials are expensive, for example, nails and gas for nail guns, they may not always be provided.

Site Managers

Many participants remarked on the differences in the approaches adopted by site managers. They can play a key role in easing the workload of the older worker, such as putting them on more skilled, but less physically demanding work. An example of this is placing older workers in a position where they can train younger workers in more complex tasks, or assigning them in safety role. But these

approaches are highly dependent on budgetary and time restrictions.

Design Issues

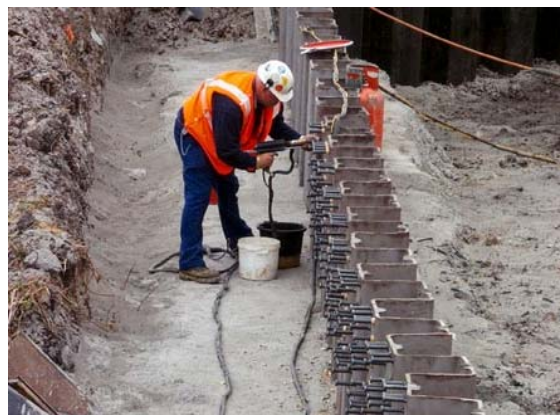
Design of tools and equipment for construction workers should be inclusive. Designers and manufacturers reported a reluctance to design specifically for older workers, as there were no financial gains in this due to a lack of demand. In particular for PPE, the design and promotion of new equipment was reactive to whichever work-related health condition was prominent at the time. Participants reported there was currently little market for construction tools designed to be used for older workers, but if there was a demand they would react to this.

Equipment and materials identified as being relevant to older workers included:

- Low-vibration tools; pre-mix mortar; pre-fabricated units; plant operatives equipment (for noise reduction); kerb-lifting equipment; reduction in weights/lifting; scissor-lift; power hand tools; mechanical handlers; ladder assists; PPE; electrical hoists; forklifts; access equipment (such as stair access on scaffolding); fall arrest equipment; facilities, for example toilets and catering; block splitters; conveyor belts; long-handle shovels; vacuum lifters for glass; and mini-diggers

Other solutions identified as being relevant for the older worker included:

- More labourers; more direct labour; pay by day rate; shorter working hours; reorganising the way the work is carried out; flexible working patterns; loading out gangs; self-selection; provision of medical care such as osteopaths; work rotation systems to avoid repetitive exposure; improved sick pay; and company partnering.



Discussion and Implications

This research has shown that older workers in the construction industry want to remain in their jobs, but although their skills, experience and commitment are valued, there is often a trade-off between that and physical fitness.

There is a perception that being employed as direct labour creates a more favourable working environment for the older worker than being self-employed. Employment tenure was thought to impact on ill-health and early retirement, and was found to be one of the most important issues affecting older workers. It is therefore worthy of further investigation and questions which could be addressed in the future include:

- Does employment tenure predict ill-health and early retirement?
- If employment tenure does have an effect on the health and well-being of construction workers, what measures can be taken to redress the balance?

Preventing older workers from retiring early from the construction industry has financial implications. It is unclear what happens to workers who do retire early because of ill health. Further study is needed to identify the proportion of these workers that transfer to another type of work due to ill health, and the proportion do not rejoin the workforce at all. Since many workers are self-employed, it could be that this cost of losing a member of the workforce is often met by the health and welfare system.

Intervention is needed in the construction industry at all levels to reduce the current unacceptably high levels of work-related ill-health. However, there are financial costs for construction companies in order to make the workplace less hostile to the older worker. In such a competitive industry there may be little incentive for them to bear these costs, as the current influx of migrant workers means that older workers can be easily replaced. It is not known whether the migrant workers which replace the older workers have the same skill level and experience as those who leave. However, managers involved in this study considered migrants to be enthusiastic, hard workers who are willing to work for less money.

It was suggested that one way to enable older workers to stay in the industry longer, would be for the client to bear some of the associated costs. Whether this could be done through the expansion of the Health and Safety Regulations is something which should be explored.

Personal responsibility for one's own health and safety at work should be encouraged. Interventions targeted at persuading *all* workers to follow safe practice can help to prevent work-related injury and ill-health in the long-term, thereby extending working life. For any targeted intervention to be successful, tools and equipment to enable workers to take personal responsibility would need to be readily available.

There is a general acceptance within the construction workforce that injury and ill-health go hand-in-hand with the job. Many would consider it naive to suggest that the construction industry could ever be 100% safe; but it should be a primary goal of both trainers and health and safety managers to ease the physical burden of the work wherever possible. This may involve detailed task analyses and collaboration with designers of construction tools and equipment in order to create a demand for appropriate aides.

Intervention at all levels of the industry is likely to be most effective in creating a favourable environment for the older worker in construction.



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The Study

The study received financial support from SPARC of £33,073 and ran for 12 months ending in November 2007. Additional support was provided by Loughborough University.

More information about the study can be found on the SPARC website www.sparc.ac.uk and obtained directly from the investigators.

As a result of this SPARC project, the research team has since secured a £148,000 EPSRC IMCRC award to develop an ageing construction worker simulation 'suit'. This will be used to assist in the development of new working practices and the design of tools and equipment used in construction industry.

Bibliography and Key References

Brenner H., Ahern W. 2000. Sickness absence and early retirement on health grounds in the construction industry in Ireland. *Occupational and Environmental Medicine*. **57**:615-620

Health and Safety Executive (HSE). 2002. Upper limb disorders in the workplace. *HSE Books*, Sudbury, UK.

Hess J.A., Hecker S., Weinstein M., Lunger M. 2004. A participatory ergonomics intervention to reduce risk factors for low back disorders in concrete labourers. *Applied Ergonomics*. **35**:427-441

Nygaard C-H., Luopajarvi T., Ilmarinen J. 1991. Musculoskeletal capacity and its changes among aging municipal employees in different work categories. *Scandinavian Journal of Work, Environment and Health*. **17**(1): 110-117

Schiybe B., Hansen A.F., Sogaard K., Christensen H. 2001. Aerobic power and muscle strength among young and elderly workers with and without physically demanding work tasks. *Applied Ergonomics*. **32**:425-431

Schneider S., Lipinski S., Schilternwolf M. 2006. Occupations associated with a high risk of self-reported back pain: representative outcomes of a back pain prevalence study in the Federal Republic of Germany. *European Spine Journal*. **15**:821-833

SPARC

SPARC is a unique initiative supported by EPSRC and BBSRC to encourage the greater involvement of researchers in the many issues faced by an ageing population and encountered by older people in their daily lives. SPARC is directed, managed and informed by the broader community of researchers, practitioners, policy makers and older people for the ultimate benefit of older people, their carers and those who provide services to older people.

SPARC pursues three main activities:

Workshops to bring together all stakeholders interested in improving the quality of life and independence of older people.

Advocacy of the challenges faced by older people and an ageing population and of the contribution of research to improving quality of life. SPARC is inclusive and warmly welcomes the involvement of everyone with a relevant interest.

Small Awards to newcomers to ageing research, across all areas of design, engineering and biology and at the interfaces relevant to an ageing population and older people. In 2005 and 2006 SPARC received 185 applications for support in response to two invitations for competitive proposals of which 34 were supported.

Executive Summaries

SPARC is supporting its award holders through funding, mentoring, a prestigious dissemination platform, professional editorial assistance, international activities and provision of contacts. Each of the projects has been small, yet the enthusiasm for discovery, and impatience to contribute to better quality of life for older people, has more than compensated for the very limited funding which was provided.

This executive summary is one of a series highlighting the main findings from a SPARC project. It is designed to stand-alone, although taken with summaries of other projects it contributes to a formidable combination of new knowledge and commitment by newcomers to ageing research, with a view to improve the lives of older people. This is a tangible contribution towards ensuring that older people receive full benefit from the best that research, science and technology can offer.